ENGINEERING NEWS-RECORD

MARCH 17, 1960

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MAR 15 1960

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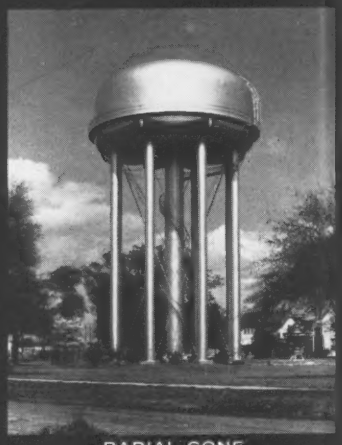
LANDMARKS OF MUNICIPAL PROGRESS...

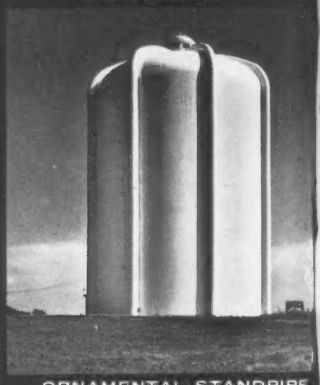
Modern Water Storage Tanks built by

CB&I



RADIAL-CONE
Standard sizes: 500,000 to 3,000,000 gals.

WATERSPHERE
Standard sizes: 25,000 to 250,000 gals.



ORNAMENTAL STANDPIPE
No limit to capacity

ELLIPSOIDAL
Standard sizes: 15,000 to 500,000 gals.

SPHEROIDAL—Standard sizes: 200,000 to 3,000,000 gals.

WATERSPHEROID
Standard sizes: 250,000 to 500,000 gals.

CHICAGO BRIDGE & IRON COMPANY

CB&I

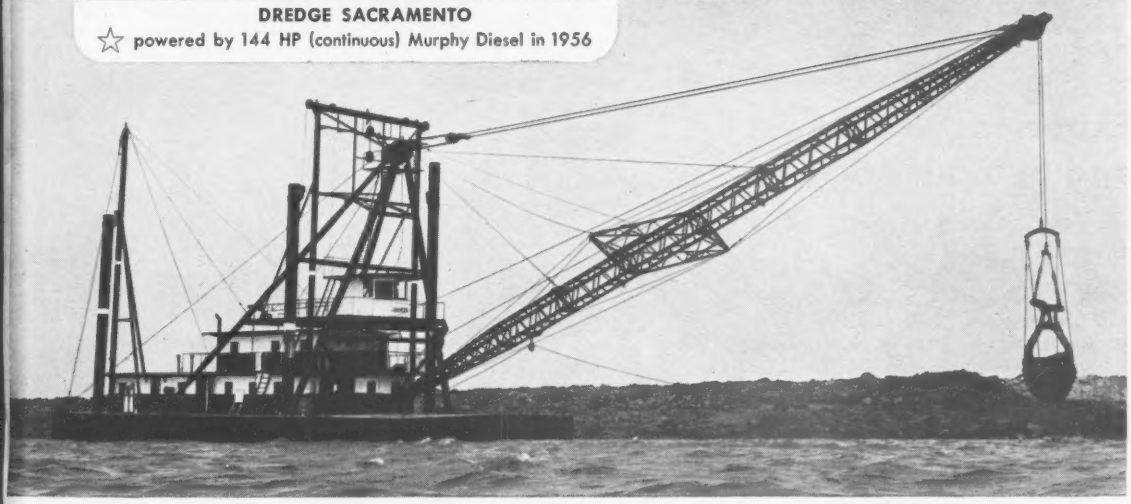
332 SOUTH MICHIGAN AVENUE
CHICAGO 4, ILLINOIS

OFFICES AND SUBSIDIARIES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

M62CB

DREDGE ALAMEDA
☆ powered by 117 HP (continuous) Murphy Diesel in 1955

DREDGE SACRAMENTO
☆ powered by 144 HP (continuous) Murphy Diesel in 1956



☆☆"These two Murphy Diesels have run 24 hours a day, 6 days a week ever since installation, and there has been but one minor service interruption in a total of 47,808 hours. Their performance and steady operation is beyond anything I could say."

Edward A. Dutra
DUTRA DREDGING CO. & DUTRA & SON, INC.
Rio Vista, California

In addition to years-full of dependable, trouble-free operation, Murphy Diesel's combination of exclusive features gives you "true" diesel performance . . . complete combustion that gets every ounce of power from every drop of fuel and high rising torque which makes that power *usable* where it counts . . . in the job! See your Murphy Diesel Dealer about the many other profit benefits Murphy brings to every construction job.

MURPHY DIESEL

429-N

PUTS MORE POWER INTO THE JOB

MP Series Murphy Diesel engines and power units are available in sizes from 105 to 320 HP with engine speeds of 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 60 to 188 KW.

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5321 W. Burnham St., Milwaukee, Wisconsin

SALES . . . PARTS . . . SERVICE

Throughout the Nation

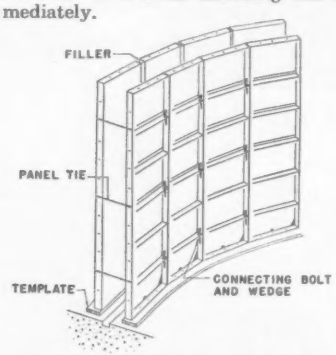
16 Working Days

Experienced Men and Symons Forms

. . . Pour Sewage Treatment Plant in Record Time

One of the speediest sewage treatment plant projects ever undertaken in the Southwest was completed in 16 working days near Phoenix, Arizona. Capacity of plant is rated at 5 mgd. It has a 700,000 gallon digester.

F. H. Antrim Construction Company used 15,500 square feet of Symons Steel-Ply panels. An important factor in selecting Symons Forms was that they could be erected on one side of the circular tanks without installing ties immediately.



Forms were contracted for on a rental basis with an option to purchase. Later, Antrim decided that the forms were so well adapted to his work that he purchased 14,000 square feet of the panels.

Folder giving the complete Antrim story sent FREE upon request.

Symons

SYMONS CLAMP & MFG. CO.
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EIGHTY-SIXTH YEAR OF PUBLICATION

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Kansas City, Missouri

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3/4 to 3 Cu. Yd. Capacity

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HERE again is the old unbeatable story of endorsement by repeat order. There is no finer testimonial to performance! The job is in Duluth, Minnesota driving tubular steel piling.

The fact that this is the 21st Northwest that Massman Construction Company has bought tells you the story of the kind of job service that Northwest has given them. Northwests smooth out the crane problems. The Northwest Independent High Speed Boom Hoist gives you boom control such as you never experienced before. Power controlled both up and down and independent of all other machine functions without sacrificing either main drum—a rugged unit capable of hour-in, hour-out service. Uniform Pressure Swing Clutches give smooth engagement free from jerks and grabs. They mean greater accuracy in spotting loads and setting leads. The Feather-Touch Clutch Control brings ease to operation and retains the true feel of the load.

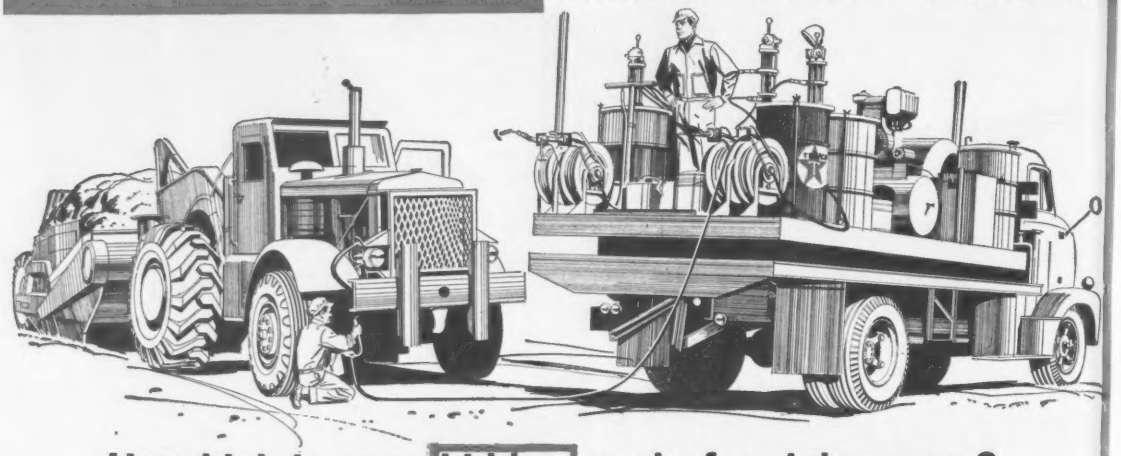
Positive traction on both crawlers, while turning as well as when going straight ahead, take these bigger Northwests where other 50-tonners have difficulty.

Your Northwest is always ready to go. We hear it everywhere and Northwest users will tell you so. No finer crane equipment can be bought.

NORTHWEST ENGINEERING COMPANY
1502 Field Building, 135 South LaSalle Street, Chicago 3, Illinois

LUBE LOGIC

Six tips to c

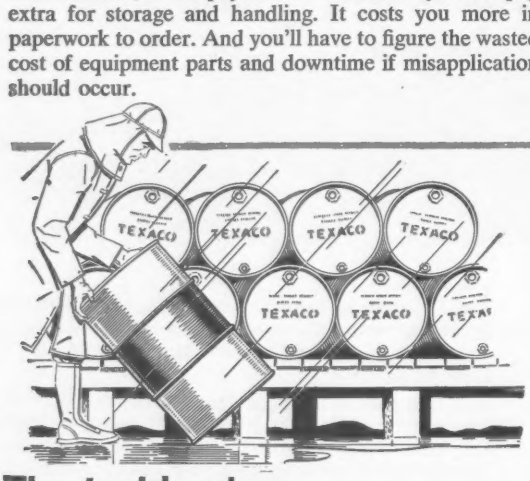


How high is your hidden cost of maintenance?

You may not realize how many extra maintenance dollars you spend when you keep many different lubricants on hand. (Six are often all you need to cover all major maintenance.) You pay extra for inventory. You pay extra for storage and handling. It costs you more in paperwork to order. And you'll have to figure the wasted cost of equipment parts and downtime if misapplication should occur.

The Texaco Lubrication Plan helps you reduce or even eliminate these hidden costs. That's because it provides the minimum number of *proven* multi-purpose and special lubricants, tailored to your job requirements.

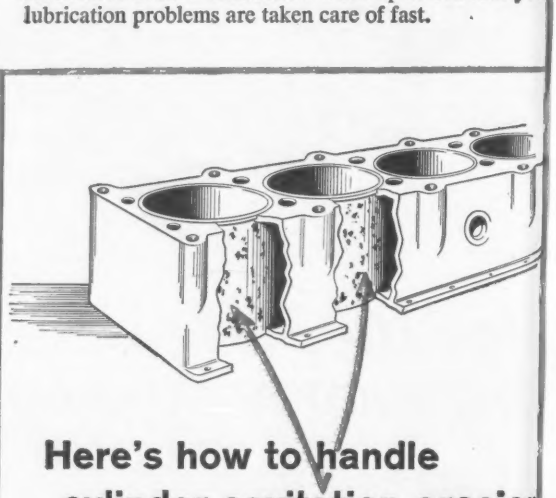
You'll do yourself a favor when you check with a Texaco Lubrication Engineer. He'll carefully plan your lubrication needs—then follow them up to see that your lubrication problems are taken care of fast.



The inside story on outside storage

You're short-changing yourself if you skip these simple precautions: drums stored outdoors should be placed on their sides. When stored on end, expansion and contraction through temperature changes can suck in rain water that collects on top of the drum.

Want to warm up lubricants that have become stiff from cold? *Don't* heat them with an open flame. You might melt the sealing compounds, and the drum will leak. You might also damage the product with too much heat in one spot. Put the drum indoors for a while before using.



Here's how to handle cylinder cavitation erosion

High pressure cooling systems in use in most supercharged diesels are subject to coolant aeration. This aeration can cause cavitation, leading to serious cylinder liner corrosion-erosion, unless a rust preventive is added to the water. A good antifreeze (like Texaco PT antifreeze) will do the job in winter—but in summer a 1% to 2% solution of Texaco Soluble Oil will do a fine job. (Remember to flush out before you add antifreeze again.)

cut maintenance costs

OIL GAUGES SPEAK A LANGUAGE ALL THEIR OWN

Look to your oil gauge pressure for clues to a variety of potential engine ailments. For example:

LOW OR NONE

1. Oil pump pickup stuck high.

LOW

1. Clogged oil pump screen.
2. Excessive main, con-rod, camshaft or rocker-arm bearing clearances.
3. Clogged full-low filter, if by-pass isn't working.
4. Excessive dilution of oil with fuel.
5. Enlarged squirt holes.
6. Loose connections or cracks in oil line.

LOW OR ERRATIC

1. Faulty oil pump.
2. Restriction in oil pan, or oil too viscous to keep oil pump intake supplied.

LOW OR HIGH

1. Faulty gauge.
2. Ineffective oil cooler depending on type, may keep oil too cold or provide insufficient cooling.

HIGH

1. Oil with viscosity too high for climate.
2. Sludge and contamination in the oil.
3. Clogged oil passages on the pressure side.

HIGH, LOW OR ERRATIC

1. Improper setting or failure of pressure relief valve.

ERRATIC, LOW, THEN NONE

1. Crankcase oil level just at or below oil pump pickup.

NO MOVEMENT OR DELAYED ACTION

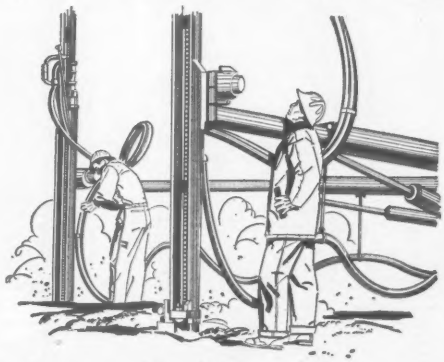
1. Clogged line to gauge.

TEXACO LUBRICATION ENGINEERS

Every month or so we'll bring you a batch of "sleepers"—little angles, so easy to overlook, where big savings in time and money can be made. But month in, month out, your local Texaco Lubrication Engineer is the best source of money-saving lubrication ideas. Don't forget that "Lubrication is a major factor in cost control." Texaco Inc., 135 East 42nd Street, New York 17, N.Y.

Don't let engines foul up!

If the fuel injector on a diesel drifts off or "dribbles," incompletely burned fuel will contaminate the crankcase. The result will be plenty of smoke—and probably engine trouble. The injector should be fixed immediately—but if it can't be, start shortening drain periods to remove the damaging oil-fuel mixture. Also, use an oil with full detergent and dispersion properties to keep other undesirable products out of the engine.



New product for rock drill couplings

Actually, it's an old friend, Marfak Heavy Duty #2, in a new application. According to the raves from customers who've tried it, the lubricant works better on rock drill couplings than anything they've ever used.

Tune In: Texaco Huntley-Brinkley Report. Mon. Through Fri.-NBC-TV

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Throughout the United States

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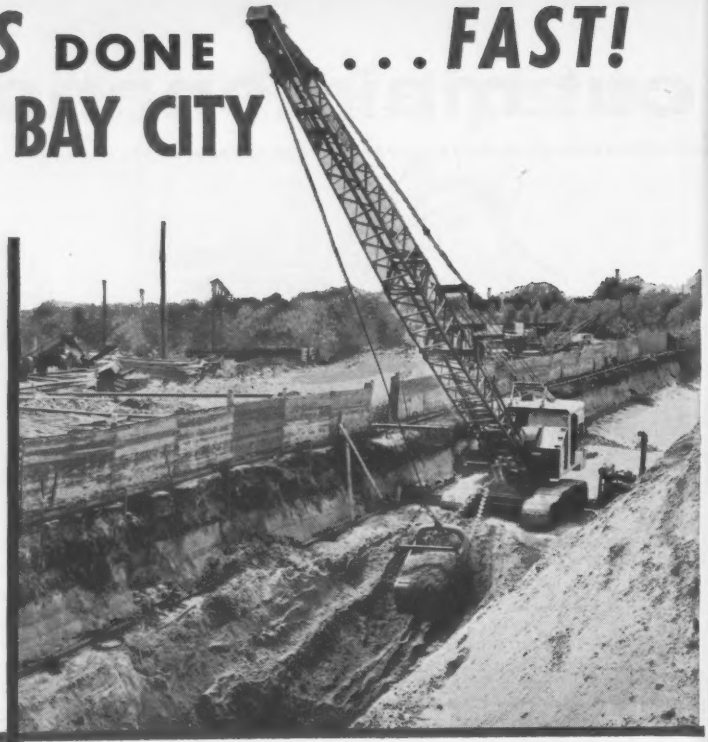
GET *BIG JOBS* DONE ...*FAST!*
WITH A 1½-2 YD. BAY CITY

BAY CITY Model 72 Dragline with 60 foot boom and 2 yard bucket excavating on a big sewer job. Powerful, smooth-operating BAY CITY draglines feature large cable-capacity drums in tandem for best cable lead . . . high line speeds . . . quick, smooth swing . . . and revolving type fairlead. Features that get big jobs done fast!

It takes equipment like this Model 720 BAY CITY 1½ yard hoe to get the job done fast . . . and economically. Maximum digging depth of 28′ 10″. . . at a 25′ depth the maximum flat is 13′ 3″ which is substantially greater than any other hoe in its class. As a crane, it is rated at 40 ton capacity.



"Real rugged rock bruiser", say field reports about the BAY CITY Model 72, shown equipped as a 1½ yard shovel. BAY CITY is smooth, powerful and efficient. Features include big clutches and brakes that exceed operating demands . . . straddle type dipper sticks . . . one piece chain crowd . . . and easy operation to get big jobs done fast.

Write For Catalog 70A

See for yourself how the quality built, trouble free, heavy duty features of the 1½-2 yd. BAY CITY Series 70 Machine can mean bigger profits for you.

BAY CITY

THE WORLD'S BEST BUILT SHOVELS AND CRANES

BAY CITY SHOVELS INC., BAY CITY 1, MICHIGAN

288

BIDS DON'T BACKFIRE

because of tire troubles... with Goodyear on the job

FINDING THE WORK FACTORS—Goodyear Big-Tire Specialists will analyze the problems of terrain, loads, climate, roads, schedules, speeds—everything that bears on tire needs and costs.

Then, from a complete line of *the world's toughest earthmover tires*, they'll recommend the most efficient and lowest-cost tire to do each job right. These tires, with a super-tough body built with 3-T Nylon Cord and specially compounded tread rubbers of unequaled toughness, cope with tremendous loads, endless flexing, cutting and chipping dangers—provide amazing durability.

PUTTING BIG-TIRE KNOW-HOW TO WORK—From the world's greatest fund of experience, Goodyear Big-Tire Specialists are uniquely qualified to help you. And they'll provide the best in tread and body designs to help safeguard your contract and your profits.

SETTING UP BIG-TIRE SERVICE—Goodyear Big-Tire Specialists will complete your tire-performance insurance by lining up, and even operating, a tire-maintenance program to save you BIG MONEY in man-hours, machine-hours and useful tire life. If necessary, Goodyear contractor service will travel with your job—handle all your tire maintenance and repairs.

With BIG TIRE PERFORMANCE
Example: SUPER HARD ROCK LUG

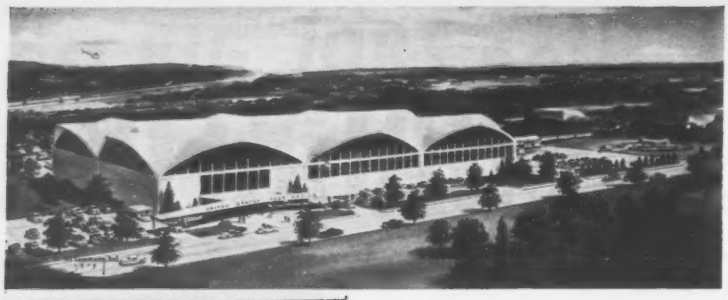
Here's a typical Goodyear big tire for big jobs—the new Super Hard Rock Lug (pictured). This wide-base off-roader has a new "square" shoulder design with extra-thick rubber for terrific traction bite and longer wear. Yet its cost is the same as ordinary wide-base tires.

Get in on all this—see your Goodyear dealer now! Or write Goodyear, Truck Tire Dept., Akron 16, Ohio.

WORLD'S TOUGHEST EARTHMOVER TIRES BY

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND



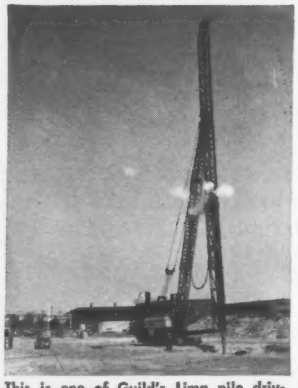
WORLD'S FIRST

Mechanized Post Office Supported On COBI PILES DRIVEN BY C. L. Guild

THE world's first fully-mechanized post office building is under construction at Providence, Rhode Island. Cost of the structure—$20,000,000.

When borings indicated a loosely deposited silt throughout the area, the prime contractor—Gilbane Building Company—called upon C. L. Guild Construction Co., Inc. to furnish and drive the cast-in-place piles specified in the design.

Guild completed the pile work in 36 days—driving 1017 Cobi piles. Lengths varied from 55 to 70 feet. Whatever or wherever your pile driving requirements, call Guild. Guild has the experience, personnel, and equipment and will welcome the opportunity to put this successful combination to work for you.



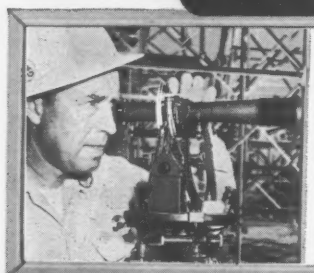
This is one of Guild's Lima pile driving rigs. The boom is 85 feet and length of leads 128 feet.

C. L. GUILD CONSTRUCTION CO., INC.

90 Water Street, East Providence 14, R. I.

BOSTON, MASS. WASHINGTON, D. C. HOUSTON, TEXAS
SYRACUSE, N. Y. ATLANTA, GA. KANSAS CITY, MO.

THE BEST IN SIGHT IS BERGER



BERGER Transit teamed up with
F. H. McGRAW & CO.
on billion-dollar
atomic energy project

C. L. BERGER & SONS, INC.
45 Williams St., Boston 19, Massachusetts

Reader Comment

Consultants Cost Less

SIR—Your article concerning the relative efficiency of consultants and state engineers in the highway program (ENR Jan 28, p. 41) shows only too well that too much heat and not enough light has been applied to this situation. It is also evident that Mr. Walsh in his letter certainly touched a sore point as far as governmentally employed engineers are concerned (ENR Dec. 10, 1959, p. 8).

The matter of engineering costs was investigated and reported in the Hoover Report, which showed clearly that governmental engineering is uneconomical and costly when compared to the operations of the consulting engineers. Similar figures re highway engineering costs have recently appeared (ENR Feb. 4, p. 25). Other experiences with government agencies show with equal clarity that a real effort has been directed towards unwarranted growth in their engineering departments in view of consultant facilities available. The results indicated by the Hoover Report are also confirmed by the experience of other countries. In the British Commonwealth the control of engineering operations by governmental departments has reduced engineering work progress to a fantastically slow rate.

The American taxpayer should be aware of this trend—amounting to socialization—and of its cost to him. He should also be aware that the directive authority usurped by government engineers relative to such consultant contracts as are in progress ties the hands of the consultant to such an extent that the real economy obtainable from his ability can scarcely be realized and, hence, the burden of governmental costs increases.

Perhaps the worst aspect of this sorry situation is not only the restriction of the consultant's ability to decrease government expenditure, but that they are encouraged to look into other fields, or even to apply their talents in other countries rather than at home.

HARRY HODSON
Fuhriman, Hodson & Rollins
Consulting Engineers
Provo, Utah

▶—Your timely article, "Consultants vs State Engineers—Stretching the Highway Dollar (ENR Jan. 28, p. 41) states that California is among the several states that have strong legal limi-

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

BETTER CONCRETE THROUGH DISPERSION CHEMISTRY

DAREX AEA

AIR ENTRAINING AGENT

on the job at Providence Post Office

World's first fully mechanized post office, this twenty-million dollar structure opens for business in Providence, R. I., during the summer of 1960.

Unique construction feature is falsework centering which will be set up, dismantled and re-used for pouring of six-inch, barrel-arch roof slabs on three separate sections of the structure.

DAREX AEA, Dewey and Almy's job-controlled air entraining agent, was specified for structural parts of roof. By evenly dispersing air bubbles throughout mix, it imparts a plasticizing action which measurably improves workability . . . substantially reduces water content . . . eases flow of concrete into forms around steel reinforcing rods.

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DEWEY AND ALMY CHEMICAL DIVISION
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DEWEY AND ALMY ADMIXTURES

designed to fit particular concrete needs

DAREX AEA provides controlled air entrainment, greater durability

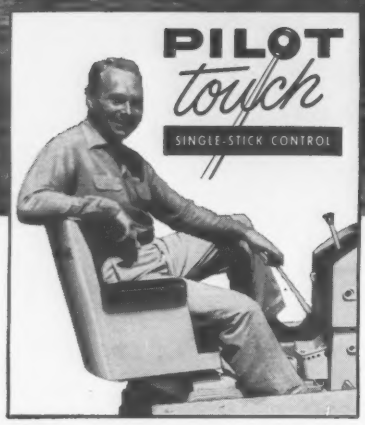
WRDA reduces water content, increasing concrete strength

DARATARD gives controlled retardation of initial set

SPONSOR: Intelex Systems, Inc., New York City; ARCHITECT-ENGINEER: Charles A. Maguire & Associates, Providence, R.I.; GENERAL CONTRACTOR: Gilbane Building Co., Providence, R.I.; READY-MIX SUPPLIERS: Pawtucket Ready Mixed Concrete Co., Pawtucket, R.I.; Morse Sand and Gravel Co., Inc., Attleboro, Mass.; ADMIXTURE SALES AND TECHNICAL SERVICE: Littleton Construction Specialties, Littleton, Mass.

Exclusive

John Deere SINGLE-STICK CONTROL sets new dozing standards



One hand takes charge of crawler

Pilot Touch is an exclusive development by John Deere, available as extra equipment on "440" Industrial Diesel and gasoline crawler tractors.

Fast, one-hand control of the tractor is now a reality with John Deere's exclusive new Pilot Touch "single stick." The operator can devote full time and attention to control of the dozer blade. The resulting increase in production and upgrading of work quality makes possible new standards for dozing. Reduction of time and effort formerly required to handle steering levers and direction reverser lever means operator stays at high efficiency longer, too.

Preferred by many contractors for shouldering and finishing work, the John Deere 64 Dozer features an 80-inch blade with full hydraulic control. For complete specifications plus details of the John Deere Credit Plan, contact your John Deere Industrial Dealer through the classified section of your telephone directory.

For Free Literature Write John Deere Industrial Division, 3300 River Drive, Moline, Illinois

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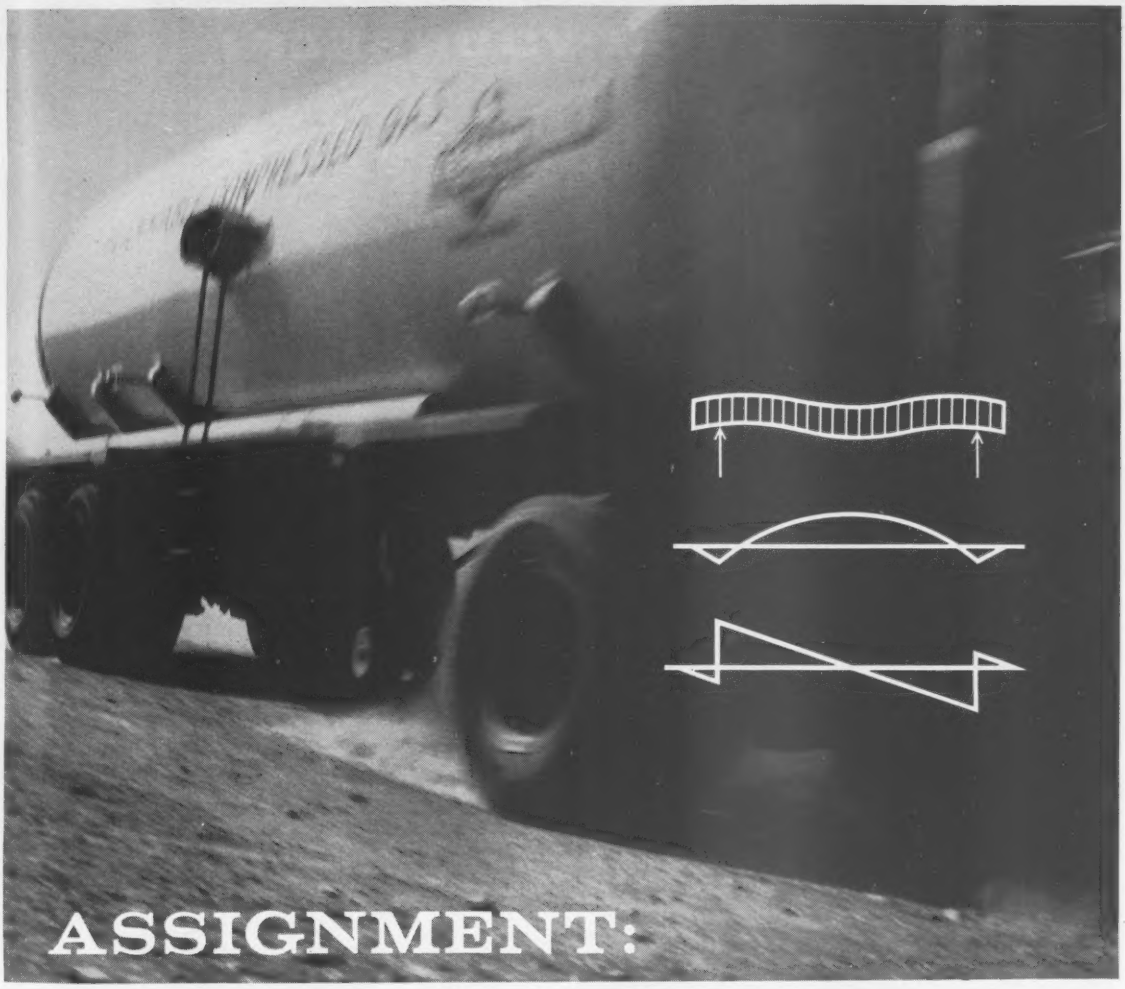

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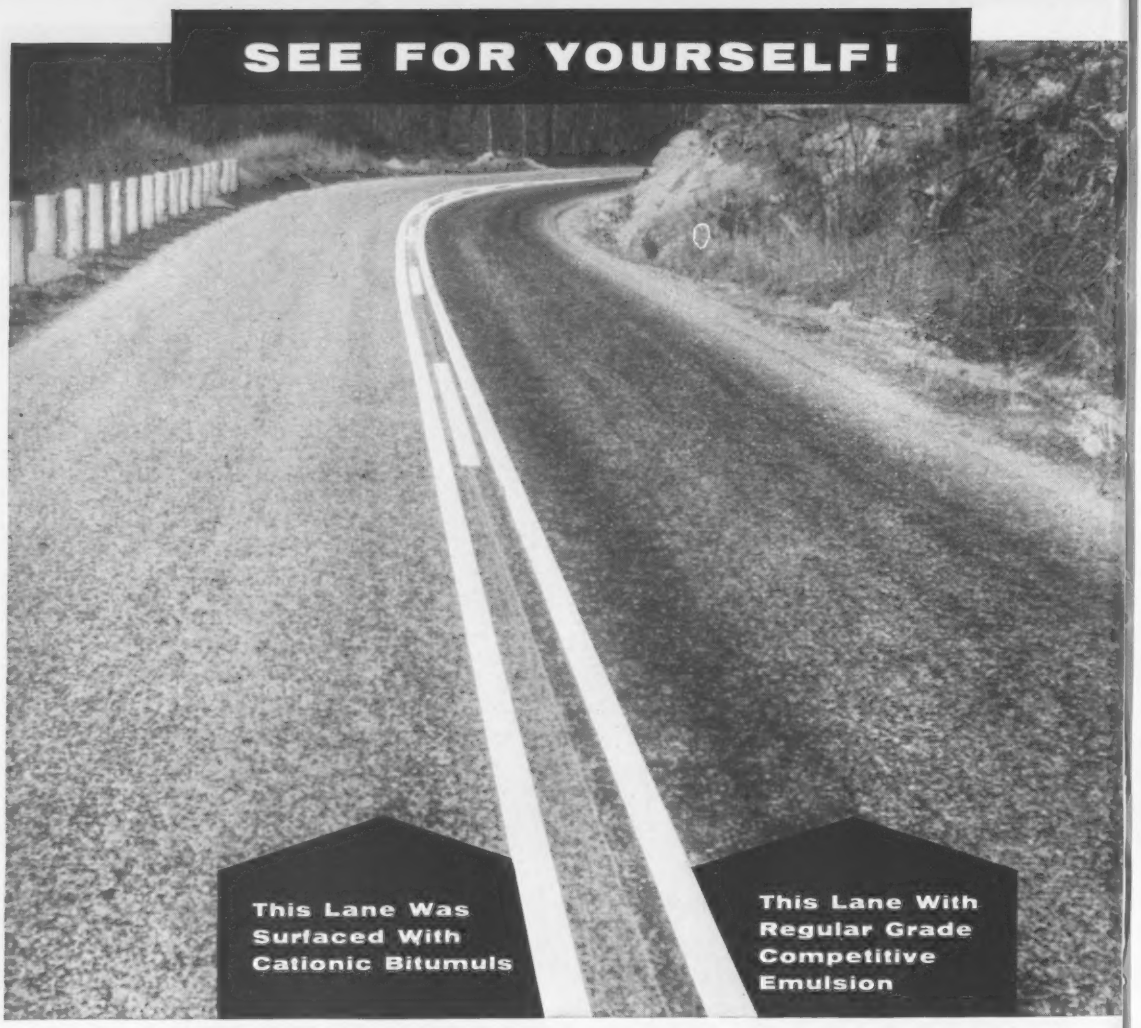

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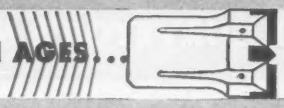
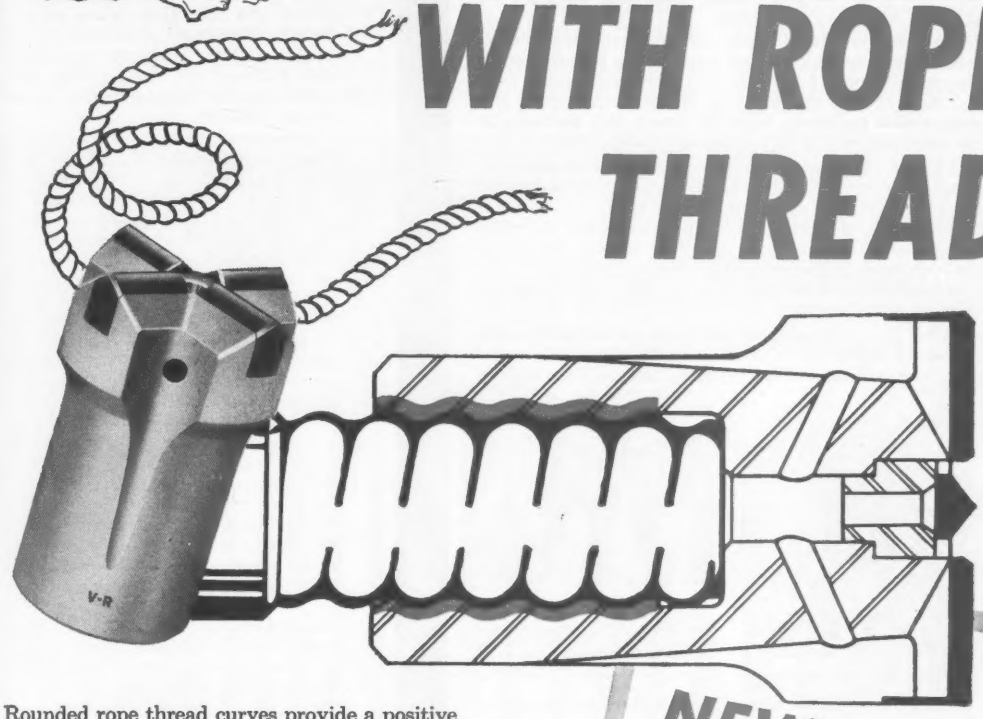


V-R

New V-R percussion bits

WITH ROPE THREAD



Rounded rope thread curves provide a positive holding power under load conditions and yet, permit fast *hand uncoupling* when load is relieved. Faster bit changing . . . more footage per shift.

Absence of sharp angles and accurate thread machining distributes the load more evenly over the total thread area and eliminates stress points that cause premature failure.

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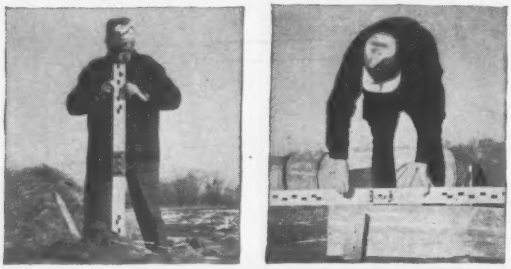
How to Make a Plumb Board for Easier Layouts

"A couple of years ago, windy days, green rodmen and terrain hazards were slowing up construction layout," recalls George Guesmer of Minneapolis. "Reference points were hidden from the transitman by brush, dirt, concrete and construction materials. With the plumb bob swinging in the wind, accurate work became impossible.

"I solved all the problems by making a plumb board. To make one yourself, obtain a builders' three-way plumb and level (used in making an ordinary mason's level) and a piece of plywood ½-inch thick, 48 inches long and the width of the plumb and level (generally three inches). Drill three one-inch holes in the plywood to permit observation of the level bubbles from the rear of the plumb board. Paint the plywood with a couple of coats of flat white.

"After the paint has dried, use black waterproof drawing ink and a ruling pen to draw a line lengthwise down the middle of both sides of the plywood. Graduate the ends of



Guesmer plumbing back of obstruction (left); offsetting.

the board in inches—or tenths, if you prefer. The alternating black rectangles make it easy to see the vertical line at a distance. To preserve the inked lines and to keep the board clean, spray the entire board with a clear plastic or brush on a clear spar varnish.

"I found my homemade 48-inch plumb board easy to handle and adequate for most work. It's especially handy for offsetting a reference line or measuring a short distance. I have run many an accurate, trouble-free mile of line using my plumb board, Gurley transits and Gurley levels."

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tations on the use of consultants. That this may be costly to the taxpayer is borne out in a report made under State Senate Resolution No. 159 for the 1955 General Session of the California Legislature.

Their findings in the California Division of Highways study on engineering costs were stated as follows: "We feel that the Division engineering and design costs will be found high in comparison with other states where professional engineering firms are engaged to supplement State Highway Engineers." Also discussed was the excessive cost of "Construction Engineering" (11% of construction costs).

This committee went on to recommend a program for the Division of Architecture in which services of qualified private architects and engineers could be used as circumstances warranted to supplement the work of the State Architects, and in so doing stabilize peak loads so the state would not have to make frequent changes in force to meet fluctuating demands. This program was adopted and has been a highly successful one for the California Division of Architecture, and has resulted in the cooperative use of the best skills in the profession.

Having worked for a number of years in the California Division of Highways, and more recently on the other side of the fence as a partner in a consulting engineering firm with $50 million worth of highway design on its drafting boards at the present time, I feel qualified to state that the private highway consultant is providing those progressive states that will use him for their heavy design peaks, efficient and economical designs at a substantially lower cost to the taxpayer than those costs reflected by the rigid structure of the State engineering department. (CALIFORNIA FY 57-58: Construction Engineering 10.3%, Design Engineering 13.8% of total construction and improvement costs; vs. private fees: Construction Engineering 3 to 4%, Design Engineering 3 to 4.5% of construction cost.) The additional cost to the state of administrating and reviewing the private consultant's work cannot begin to bridge the gap between these two sets of figures.

B. D. McCreary
Porter, Urquhart, McCreary & O'Brien
San Francisco, Calif.

Turnpike Engineering Fees

The news story on the probe of road costs in Pennsylvania (ENR Feb. 4, p. 25) erroneously attributes to George S. Richardson the statement that engineering costs for the Ohio Turnpike were 3:47% of construction costs. This figure should have been 9.54%. According to Mr. Richardson, of Richardson, Gordon & Associates, Pittsburgh consultants, the lesser percentage represents only engineering costs for design and preparation of contract plans.

Rising on Raymond caissons, a new post office for Detroit

Built in an area with extremely challenging subsoil conditions, Detroit's new Post Office is assured a permanent position on the city's skyline. The reason: a foundation of 333 Raymond caissons; average length, 104 feet; diameters of 36 to 68 inches; bell diameters up to 13 feet 6 inches.

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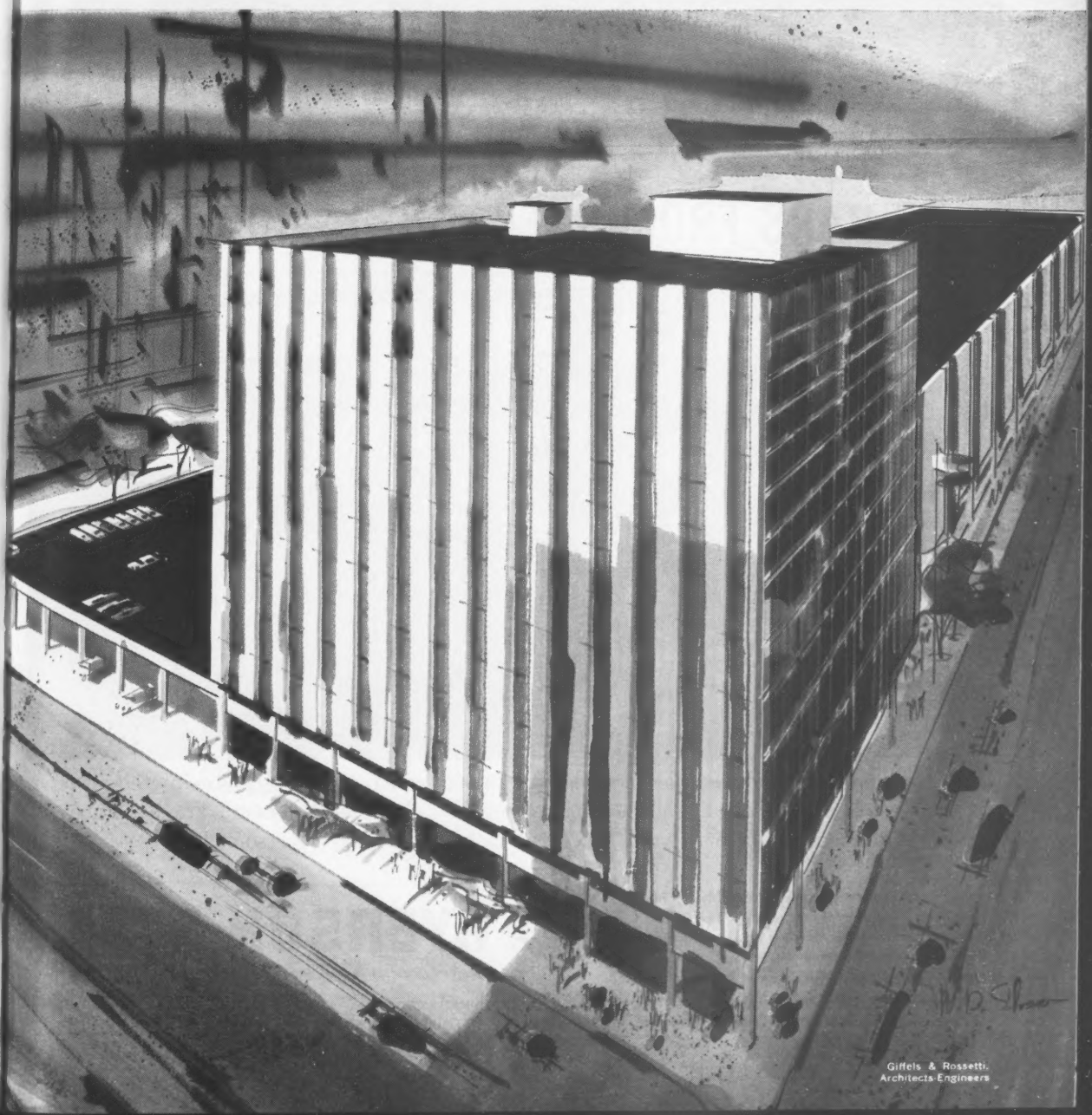
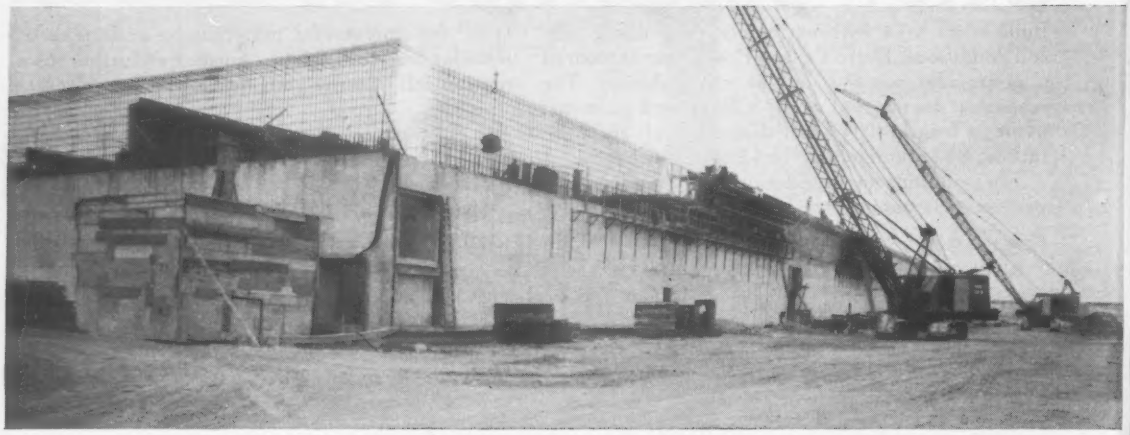


FOR WORLD'S LARGEST FILTRATION PLANT...



This 960 m.g.d. water filtration plant—the world's largest—is rapidly going up on Chicago's lake front. Contractor for filtered water reservoir: Herlihy Mid-Continent Co. Contractor for east and west half of filter substructure: Gust K. Newberg Construction Co. Architecture and engineering: The City of Chicago.

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

DATA FOR AN EDUCATED GUESS—Sometime before Sept. 30, the President must appoint a new Chief of Engineers to replace Lt. Gen. Emerson C. Itschner, who will retire after four years in the job. The new man must not be over 56 years old. Probably, he is now a major general. Logical candidates under these specifications: Walter K. Wilson, Jr., Deputy Chief of Engineers for Construction; William E. Potter, Governor, Panama Canal Zone; William A. Carter, Division Engineer, Vicksburg; Donald H. Tulley, Commanding General, U.S. Army, Japan; and William E. Baker, Assistant Chief of Staff, U.S. Army, Pacific.

THE BRIDGE OF SIGHS—The Washington State Toll Bridge Authority has taken the accident-prone Hood Canal floating bridge project away from Charles E. Andrew, designer and chief consulting engineer. Howard, Needles, Tammen and Bergendoff, Kansas City engineering firm, will "complete the design and put the bridge together." Two of the bridge's huge pontoons sank late in 1958 (ENR Jan. 8, 1959, p. 25); two were damaged in a collision in December (ENR Dec. 24, 1959, p. 13); and six were damaged in a storm this year (ENR Feb. 18, p. 30).

WHO'LL TAKE THE HIGH ROAD?—Maybe consultants who see highway engineering work dwindling away as state agencies do more and more of it here should look abroad for their next assignment. Word is that Scotland may engage a U.S. consultant for some expressway work. At least the Scots have had feelers out here.

PUT YOUR MONEY WHERE YOUR WORK IS—The Carpenters Pension Trust Fund for Northern California will invest an eventual $25 million in government-backed home mortgages. The fund is financed by Associated Home Builders of the Greater East Bay. First purchase of a $400,000 monthly investment program was made last week.

BEACH POLLUTION BARRIER—Enclosing and chlorinating beach bathing areas in New York City's East River might cost only a third as much as treating the polluted water wholesale. The enclosures would be cellular steel sheet pilings. The method was suggested as an alternative means of pollution control in a report prepared by Greeley & Hansen, Chicago engineers, for New York City's public works department.

BIG BROTHER IS WATCHING—A builder has installed closed circuit TV to monitor the service entrance and both elevators of a new apartment house in New York City. A monitor screen is in the lobby. Object: protection for tenants. How do they feel? One says, "Once you get over the fact that Big Brother is watching you, the safety factor is worth it."

TODAY'S FINEST ROADS ARE PAVED WITH ASPHALT

Produced by Esso Standard Oil Company

The Maine Turnpike is another example of how Asphalt supplied by Esso helped build a better road at lower costs. The Maine Turnpike Authority saved more than $21,000 per mile over equivalent slab type construction. Compare these advantages:

- *Unsurpassed quality* — Asphalt produced by Esso is specially refined from selected crudes to provide maximum pavement strength to resist heavy axle loads and the effects of severe frost.
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Can Asphalt supplied by Esso help you build a better road at a lower price . . . with lower maintenance costs? For more information, or technical assistance in your road building plans, write: Asphalt Products, Esso Standard, Division of Humble Oil & Refining Company, 15 West 51st Street, New York 19, New York.

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WASHINGTON OBSERVER

- Transportation study is filed
- A better year for housing?

- **The federal government contributes to the urban transportation snarl through its huge highway programs; it should therefore help cities solve their problems.** That's the gist of a major transportation study prepared by the Secretary of Commerce for the White House.

  The federal government should encourage communities to make broad land-use plans with transportation as an essential part. To accomplish this, the report states, "methods might include amendment of existing highway legislation to allow charges on city highway gateways to help divert auto commuter travel to mass transport means, higher community parking fees to help similarly, diversion of such funds to pay for other transport facilities, etc."

  The report recommends that all types of transportation be made to pay for using federally built facilities.

—

- **The first signs of easier mortgage money bring predictions that housing may have a better year than expected.** Housing officials and economists are swinging to the view that builders will start more homes than estimated last fall, when a substantial decline was forecast for housing.

  This feeling persists despite January and February new starts figures, which fell off after an encouraging performance in December.

  Not everyone agrees that the year's total will go higher than the 1.1 to 1.2 million starts, public and private, anticipated last fall. Experts at the National Association of Home Builders still see a 10 to 15% decline this year below last year's 1.4 million starts. They point out that easing in the mortgage markets does not show up in the new starts figures until four or five months later. Therefore, easier money from here on out isn't likely to push the 1960 starts figure much higher.

  Applications to FHA for one-family to four-family houses have not shown a rise so far this year, and they are generally considered a good indication of future construction. During January and February they have stayed steady at an annual rate of 264,000, which is 13% below December.

  Cost of mortgage money, notoriously slow to follow the general trend of the money market, has steadied generally in recent months, after rising steadily during the past year.

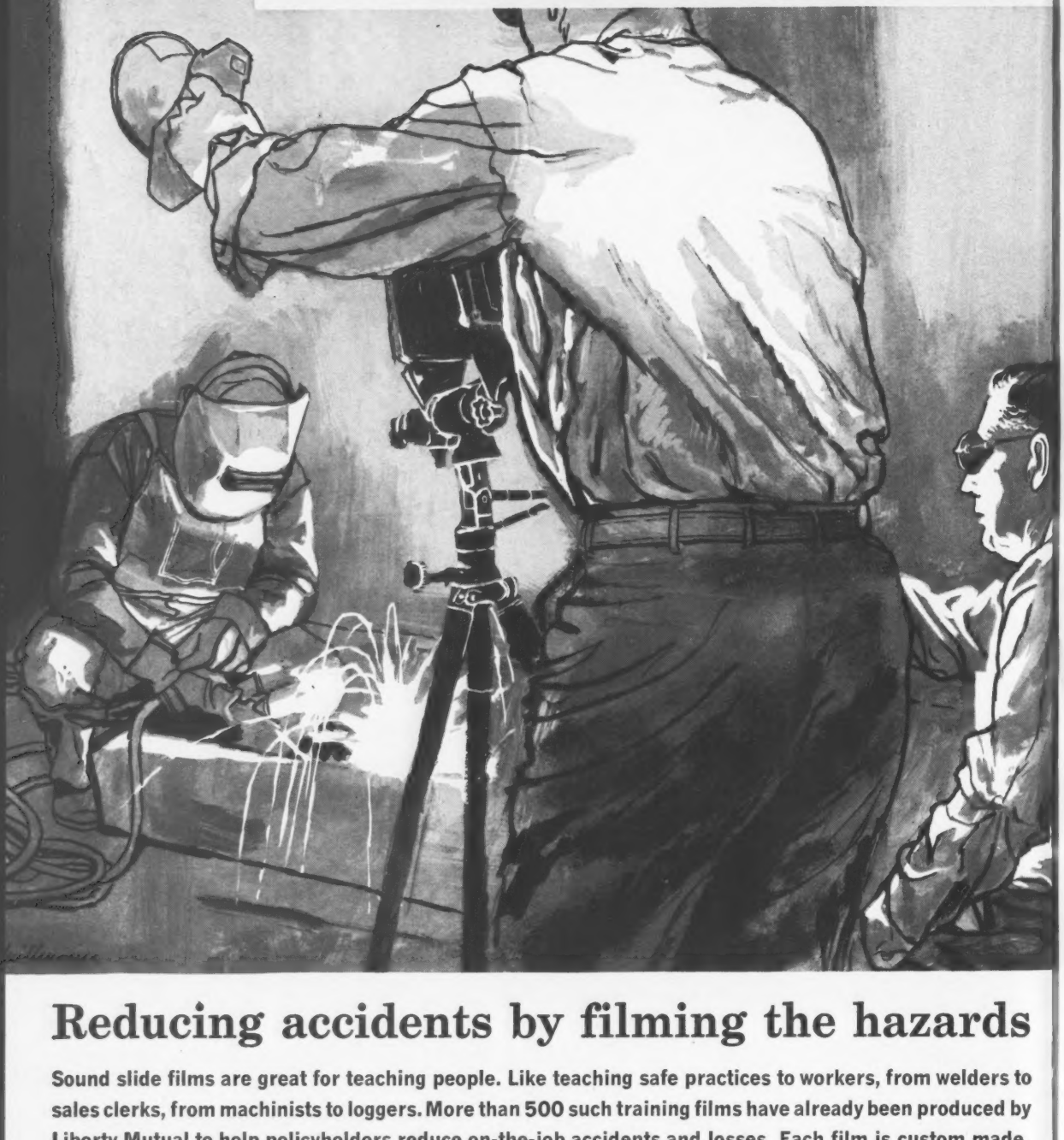
  Another indicator—the price paid in the secondary market for top-grade FHA mortgages—has held about even so far this year.

  The national average discount reported by FHA on March 1 was 3.6 points, bringing the average price down to 96.4. The March figure is back to the level of December and January after dropping one-tenth of a point to 96.3 on February 1.

—

- The White House last week sent Congress draft legislation designed to carry out a $500-million rapid transit program proposed last summer as part of a $2.5-billion transportation plan for the national capital region (ENR Aug. 20, p 24).

How **protection in depth** helps cut compensation costs



Reducing accidents by filming the hazards

Sound slide films are great for teaching people. Like teaching safe practices to workers, from welders to sales clerks, from machinists to loggers. More than 500 such training films have already been produced by Liberty Mutual to help policyholders reduce on-the-job accidents and losses. Each film is custom made, using policyholder personnel and facilities in the pictures. This is but one of the many Liberty Mutual services that add up to protection in depth. For more facts about Liberty's protection in depth and how it can help you lower your business insurance costs, get in touch with your nearest Liberty Mutual office.

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Capital Spending: Outlook Is Up

- **Businessmen plan a 14% rise in spending. That could push plant and equipment outlays this year above 1957's record high.**
- **That rosy outlook becomes even better for construction now that there are signs the tight money market may loosen a bit.**
- **The expected increase is big enough to dispel some recent pessimism, but small enough to hold down inflation, say government economists.**

Two major questions of prime importance to the construction industry for 1960 were at least partially answered this week—and the answers are on the side of expansion.

• **First, businessmen reported to the government that they intend to spend $37 billion this year for productive equipment and new industrial and commercial construction projects**—a substantial 14% rise over last year. It will carry plant and equipment outlays a shade above 1957's record of $36.96 billion.

• **Second, the Federal Reserve is easing up a bit on credit restraint,** indicating that the financing of construction projects may be easier and cheaper than seemed likely a few weeks ago.

The plant and equipment picture was disclosed in a survey taken by the Commerce Department and the Securities and Exchange Commission in February. It is the first government survey to report businessmen's intentions for the whole year.

The outlook for $37 billion worth of plant and equipment spending this year is interpreted by Administration economists as a strongly reassuring note after several months of developments that created some doubts.

The faster pace ends a six-month period that began last summer, during which expenditures hovered around an annual rate of $33 billion. They were held there in part by the effects of the steel strike, so some of the rise now under way is a hold-over from last year.

Government experts compare the plant and equipment situation today with what occurred in early 1956. That year also started with spending on a plateau, with no particular sign of expansion. Then expenditures began to climb, rapidly at first, then at a slower pace. In all, the expansion period lasted 18 months once it got started. Without trying to guess how long the new rise will last, government economists say the new survey probably points to another sustained rise.

There is evidence to support this idea in the survey. It shows that spending the first six months of 1960 will be at an annual rate of $36.1 billion. In the second half, it will pick up speed, hitting a $37.9-billion pace. This means the year will very likely end on a rising note, giving 1961 a good start.

"There's plenty of muscle in a rise of this kind," one government economist points out, "particularly in the way every type of industry is sharing in the move. I expect to see spending still rising smartly as the new year begins." Only a sudden shrinking of corporation profits, or an unexpected decline in consumer expenditures seems likely to change this picture.

Inventories—which economists had counted on to spark the economy in the early months of the year—are being filled more quickly than expected. Auto production has been adjusted downward. The stock market went into a slide; and, more recently, a succession of heavy snow storms not only slowed down construction projects, but dealt a sharp blow to retail trade.

In such an atmosphere, it is likely that forecasters would have begun lowering their estimates for 1960 business if the plant and equipment figures had been disappointing.

Business and government economists hailed the indicated rise as just about the right amount. The $37 billion expected this year compares with $32.6 billion last year, and $30.5 billion in 1958.

"The rise is big enough to dispel some of the undue pessimism of recent weeks, but not large enough to give us any worries about inflation," one Administration economist puts it.

The survey is more likely to understate actual performance than to overstate it. Usually, when business goes into a period of rising outlays, the surveys are on the conservative side.

Last November, for instance, businessmen reported they would spend at an annual rate of $34.4 billion this January-March quarter. But the new survey shows they are spending at a rate of $35.3 billion, almost $1 billion higher.

All categories of industry are taking part in the rise, with the key durable goods group leading the way with a 33% rise over last year. Within this group, iron and steel with a 67% jump is the leader, followed by auto makers with a 59% gain.

The chemical industry, with a 33% gain on the books, leads the non-durable manufacturing group, reversing a downtrend of several years.

Electric utilities, with a 7% gain, are also turning up after several years of more or less holding even. Natural gas companies also are planning a 7% rise.

The big "commercial and other" category, which is dominated by plans for retail stores, office buildings and the like, shows a 7% rise, from $10.9 billion last year to $11.6 billion.

The $37-billion total is unusually close to the results of the McGraw-Hill survey of capital spending plans (ENR Nov. 12, 1959, p. 24). It indicated $37.2 billion for 1960. The two surveys do not cover the same industries and thus are not exactly comparable.

The change in the thinking of Federal Reserve officials about credit restraint does not herald a swift swing to easy money. They make moves of that kind only when they are convinced a recession is shaping up—and they stress that no recession is in sight. But they do feel that the threat of inflation—which has dominated their thinking since 1958—has largely subsided the last two months. They see this year as

(*Turn the page*)

an opportunity to allow the money supply to expand in line with general economic growth, without fear of inflationary consequences. Last year, for example, they held the money supply to a mere 0.5% expansion, while the economy was growing by 8.5%. This is more restraint than they feel is appropriate for 1960.

Technically, what seems to be in the offing is not easy money, but a lesser degree of restraint on credit. This will be reflected in the net borrowed reserve position of commercial banks, a key indicator of the tightness of money. Net borrowed reserves is the amount of money banks borrow from the Federal Reserve System. In recent weeks it has been running around $450 billion. It may be allowed to shrink to $300 billion or so.

In less technical terms, this means the Federal Reserve will supply reserves to the banking system to meet whatever demand appears for loans during the next month or so. Unless inflation again becomes a threat, these reserves will be allowed to remain in the banking system, causing an increase in the money supply.

This is a fundamental change from the credit picture that was so discouraging to some sectors of the construction industry when the year began. Interest rates had been rising sharply, and more increases were widely expected. Many observers were convinced that the Federal Reserve was on the verge of increasing the discount rate, which would have been still tighter money. It looked as though money for residential mortgages and public works, in particular, would be more expensive as the year wore on.

There is little likelihood that the Federal Reserve's present attitude will lead to any marked decline of interest for long term borrowing. But it does lessen the threat of even-more expensive borrowing.

Where the increased spending will come[1] . . .

	1959 ACTUAL (In billions)		1960 EST.	
	July-Sept.	Oct.-Dec.	Jan.-Mar.[2]	Apr.-June[2]
MANUFACTURING	$12.25	$12.87	$13.89	$14.57
Durable Goods Industries[3]	5.83	6.16	6.88	7.23
Primary Iron and Steel	.90	1.14	1.48	1.65
Primary Nonferrous Metals	.28	.31	.33	.32
Electrical Machinery & Equipment	.55	.56	.66	.66
Machinery Except Electrical	.95	.97	1.01	1.10
Motor Vehicles and Equipment	.68	.74	.83	.91
Transportation Equipment Excluding Motor Vehicles	.41	.38	.40	.43
Non-durable Goods Industries[4]	6.42	6.71	7.01	7.34
Food and Beverages	.83	.86	.88	.88
Textile Mill Products	.45	.50	.52	.57
Paper and Allied Products	.66	.69	.69	.77
Chemicals and Allied Products	1.30	1.31	1.41	1.40
Petroleum and Coal Products	2.47	2.57	2.69	2.78
MINING	1.01	1.04	.96	1.01
RAILROAD	1.28	.85	.99	1.13
TRANSPORTATION OTHER THEN RAIL	2.17	2.15	2.26	2.43
PUBLIC UTILITIES	5.58	5.48	5.80	6.02
COMMERCIAL AND OTHER[5]	11.06	11.19	11.42	11.75

How '60 investment compares with '59 . . .

	1959 (In millions)	1960[2]	% CHANGE
MANUFACTURING	$12,067	$15,132	+25
Durable Goods Industries	5,773	7,662	+33
Iron and Steel	1,036	1,728	+66
Nonferrous Metals	313	372	+19
Electric Machinery	519	742	+42
Machinery (except elec.)	909	1,185	+31
Motor Vehicles	641	1,020	+59
Transportation Equipment	390	465	+21
Stone, Clay, Glass	529	684	+28
Other Durable Goods[3]	1,436	1,466	+ 2
Non-durable Goods	6,295	7,470	+19
Food, Beverages	825	838	+ 1
Textiles	412	470	+15
Paper & Allied Products	630	696	+11
Chemical & Allied Products	1,235	1,642	+33
Petroleum & Coal	2,491	2,930	+18
Rubber	190	254	+32
Other Non-Durables[4]	511	640	+25
MINING	987	1,004	+ 2
RAILROADS	923	1,115	+10
TRANSPORTATION (other then rail)	2,022	2,144	+ 6
PUBLIC UTILITIES	5,667	6,066	+ 7
COMMUNICATIONS	2,667	11,655	+ 7
COMMERCIAL AND OTHER	8,210		
Total	$32,543	$37,016	+14

[1] Data exclude spending in agriculture and outlays charged to current account. [2] Estimates are based on anticipated expenditures reported by business in late January and February 1960. [3] Includes industries not shown separately: stone, clay and glass, and other durable goods. [4] Includes industries not shown separately: rubber products and other non-durable goods. [5] Includes trade, service, finance, communication and construction.

$1.1 Billion Authorized For Military Construction

The House of Representatives last week voted military construction authorizations totaling $1.1 billion.

The authority is contained in a bill that provides $953 million for new construction by the military forces, $108 million to cover increased costs of going projects and $47 million for new facilities to serve reserve units.

Nearly 60% of the $1.1 billion will go into new construction related to missiles. Facilities to support ballistic missiles, as one example, take $298 million of $651 million allotted to the Air Force. Other missile systems also share in the large Air Force total and in the sums of $148 million assigned to the Army and $133 million apportioned to the Navy.

New construction authority is listed in the measure for 392 named installations and for 85 classified locations that cannot be definitely designated. All new projects will provide additional facilities at or close to existing installations.

A money bill to finance the authorized new construction will be considered soon by the House Appropriations Committee.

Research Is a Must

Value of social sciences stressed at ASCE meeting

Civil engineers will have to assume leadership in research projects in social as well as physical sciences if they are to regain leadership in engineering, according to Morrough P. O'Brien, dean emeritus of the College of Engineering of the University of California at Berkeley.

Social sciences will play an increasing role in engineering as they become more exact, Dean O'Brien told the winter meeting of the American Society of Civil Engineers at New Orleans last week. He said that psychology, economics, political science and sociology are included within the broad designation of engineering sciences.

All manner of non-engineers—physicists, chemists, architects, planners, economists and public health specialists—are encroaching on the proper functions of the engineer, he warned.

The dean placed equal importance on the need for research into physical sciences and mathematics and into the analysis of transportation systems, river use and control systems and structural systems.

"To organize and guide research presents an opportunity and a challenge for the civil engineers," said the dean. He urged his audience to take the lead on the solution of socio-economic problems.

"The civil engineer cannot go far alone in the many areas needing basic research," he said. "But he can play the major role in a group effort by defining the problem, guiding the program to a useful conclusion and interpreting the results for application by the practitioners."

The St. Lawrence Seaway and Power Project was named the outstanding civil engineering achievement of the year. Pittsburgh's new sewage works won honorable mention.

The St. Lawrence work was judged on its contribution to civil engineering and its value to mankind. Plaques will be placed on structures of the international project May 19.

E. L. (Larry) Chandler, who retires as assistant secretary of ASCE this month, was named by the board as the first recipient of the society's Professional Recognition Award.

Mr. Chandler, who served on the society's staff in several capacities since 1944, will continue to be the ASCE treasurer after his retirement.

The board of direction made the society a co-sponsor with other engineering societies of a joint engineering-management conference that will be held in Chicago this year.

Some 240 tons of falling concrete left this mess as . . .

Collapse Delays Garage Job

A formwork collapse during a slab-casting operation last week dumped 120 cu yd of freshly placed concrete from the roof of a three-story underground municipal garage under construction in Memorial Park, Newark, N. J. Twenty workmen on the deck scrambled to safety seconds before the collapse.

The workmen were placing concrete for an 18-in.-thick roof slab designed to carry 4 ft. of earth for the park above when the collapse occurred. A crane had swung the last concrete of a 300-cu yd, 5,200-sq ft pour to the deck and workmen were screeding when a warning rumble from below signaled them off the deck.

A 2,000-sq ft area containing some 240 tons of fresh concrete gave way, carrying with it 160 tons of the hardened concrete slab below. This first below-grade floor had been cast two weeks earlier.

The slab at the second below-grade level held, although it cracked in some places. Both below-grade slabs had been reshored with steel pipe screwjacks.

Concrete in the slabs contains high-early-strength cement.

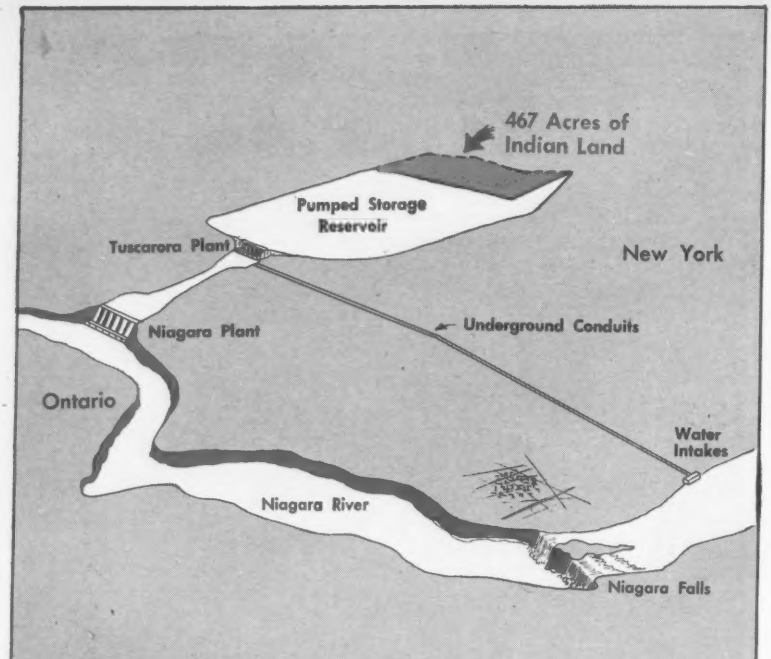
Architect Frank Grad and Sons of Newark attributed the cause to "failure of some portion of temporary construction." The architect submited a report to the Newark Parking Authority.

The architect, in conjunction with Weiskopf and Pickworth, the New York City consulting engineer firm that designed the structure, made a survey of the damage. After removal of debris, further study will be made to determine remedial measures to be undertaken by the contractor.

The accident may delay the $5.6-million project several weeks, according to Richard N. Dinallo, president of Terminal Construction Corp., Wood-Ridge, N. J., general contractor. Construction will continue in other areas. Only 2% of the total floor area was affected by the collapse.

The garage will provide driver parking for 1,031 cars in a parking area of 280,000 sq ft. Two double-lane ramps will converge in the first below-grade level. Another ramp will spiral down from this level to the two lower parking floors. There are two exit ramps.

Construction, which started last August, is about half complete.



Tuscarora Reservoir size finally firms up as . . .

High Court Ends Niagara Case

The final decision handed down last week in the two-year struggle between the Power Authority of the State of New York and the Tuscarora Indians won't alter the schedule of the Niagara Power Project.

The main effects will be enlargement of the pumped-storage reservoir and an increase of 100,000 kw in the project's firm generating capacity.

Although the Supreme Court decision was a victory for the Power Authority, affirming the agency's right to acquire Tuscarora land for a reservoir, the long and bitter battle was not a total defeat for the Tuscaroras.

Reservoir design changes during the protracted litigation killed off Power Authority interest in most of the land originally sought. Instead of 1,383 acres, the authority now wants only 550.

The pivotal question in the case has been whether the Tuscarora land is a reservation within the meaning of the Federal Power Act. Reservation status would exempt the land from acquisition non-Indian land is.

The Supreme Court ruled that it is not a reservation, thus upsetting an earlier ruling by the District of Columbia Court of Appeals. The high court decision thus subjects Tuscarora land to eminent domain, just as surrounding non-Indian land is.

In the face of earlier setbacks in the dispute, the Power Authority redesigned the dikes to provide an additional 10 ft of usable depth in a smaller reservoir, entirely off Indian land. This measure would have held the loss of firm capacity to 100,000 kw even if the agency had lost the struggle. The effect of the extra depth now, with additional land available, is to reduce the reservoir area needed to restore firm capacity from 1.7 to 1.8 million kw, as originally planned and licensed.

Consequently, the Power Authority plans to take only 467 acres of Tuscarora land for the reservoir, or a total of 550 acres, including Indian land already occupied by transmission lines. Also to be added to the reservoir is a triangular section of non-Indian land covering about 90 acres.

The Power Authority says the extra acreage will run the reservoir cost up but won't push total project cost above original estimates.

Although work has been going ahead steadily on the $720-million Niagara Power Project (ENR Mar. 1, p. 30), nothing has been done that will have to be undone to take advantage of the bigger reservoir. Work has been under way since last summer on the dikes off Indian land, and the bigger reservoir can be completed on schedule, the Power Authority states. The reservoir question has had no effect on powerhouse design. No change was contemplated from the 2.19-million kw of installed capacity originally planned.

Less Red Tape

Changed procedures may speed renewal projects

The Urban Renewal Administration is distributing a simplified manual designed to speed local projects. More than 400 local public agencies have already received copies of the new easy-to-read manual, which has been in preparation since last October (ENR Oct. 23, 1959, p. 82).

The condensed but complete how-to-do-it instructions can save up to twelve months in carrying a project through from initial concept to completion, URA Commissioner David M. Walker says. Most of this saving will come in the preparatory stages that transform a project from a gleam in the eye to a cleared site ready for construction by redevelopers. This phase has been taking two to three years normally—even longer for some projects.

An additional saving of as much as eight months or more is looked for when URA completes a fast revision of its internal procedures, expected soon.

The rules just issued give long-sought additional authority and responsibility to the local redevelopment agencies. Third-party contracts, for example, no longer need URA approval. (A third-party contract is any contract between the local public agency and a contractor, engineer, architect, appraiser, lawyer, demolition firm, etc., that contributes to the project cost, in which the federal government shares under its contract with the local agency.)

But the new instructions do make mandatory an economic analysis—a land utilization and marketability study—by a qualified consultant during the project planning phase. This analysis will keep the local agency from going astray on economic planning and will also aid redevelopers in bidding on the project.

The manual also makes clear that a local agency may negotiate a contract with a redeveloper without holding a public hearing. Hearings at this stage have cost redevelopers dearly when other firms have offered bids for the land on the basis of plans in which a redeveloper had invested large sums.

Commissioner Walker foresees an increase in volume of applications to URA as a result of the simplified requirements. Part of this increase will come from smaller communities, he believes. Many sponsors of smaller projects have been deterred by the cost and complexity of the old procedures.

Since Sept. 23, when the 1959 Housing Act became law, URA has committed $155 million of federal grant funds to planned local projects, and it expects to commit about as much again by June 30.

Tax Relief for New York Builders?

Drastic changes in housing and urban renewal programs may be forthcoming in New York City—among them a blanket tax exemption for all new housing.

The changes are urged in a report made public last week by J. Anthony Panuch, the mayor's advisor on housing and urban renewal. Mr. Panuch, a specialist in governmental reorganization, was called in by Mayor Wagner last August, at the height of a controversy over slum clearance, to suggest a way to bring order out of the confused city building programs.

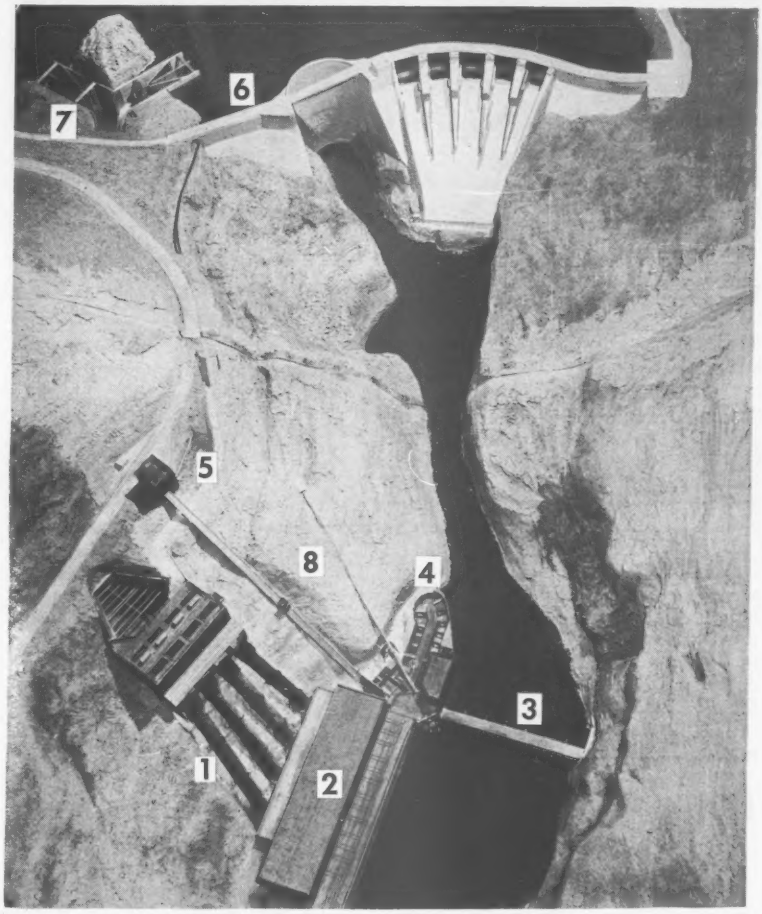
An "across-the-board" state tax exemption law for all new housing is strongly recommended by the Panuch report as a way to attract large private developers "without whose efforts the housing shortage cannot be overcome." The tax exemption would be modeled along the lines of a 1920 state tax law, which provided full tax exemption until 1932 for all housing begun or completed between 1920 and 1922.

Basic to implementation of the report's recommendations is a reorganization of housing and urban renewal agencies. The report suggests establishment of a special three-man board to consolidate the various agencies in this field. If adopted, this change would mean the end of the Slum Clearance Committee, headed by Robert Moses, and the city's Urban Renewal Board.

Other major policy changes recommended to alleviate the ills of big city housing include the following:

- The city must undertake a vigorous program of publicly aided, privately owned, middle-income housing within the city core. In this way the city can recapture the class of job holders that it has lost to the suburbs.
- New housing projects should be concentrated in deteriorating commercial areas, rather than residential zones, to minimize relocation.
- The city's annual housing budget should increase the proportion of publicly assisted, privately owned housing from 5% to 15% of all housing construction.
- Maintenance of slum properties should be made an unprofitable investment, instead of the profitable one it now is. Slum properties need to be reassessed to fix their value according to the profits they yield. Pressure should be applied to have federal income tax laws tax capital gains from slum properties at the regular income rates, rather than the lower rates for capital gains. The Bureau of Internal Revenue should make heavy inspection of the returns to slum property owners to determine whether they are improperly claiming depreciation. (In Chicago, where a similar program is under way, taxes on slum holdings are up 60%.)
- Condemnation procedures should be investigated to determine ways to eliminate the disparity between assessed valuation and condemnation awards.
- A survey of the staff requirements in the Building Department should be made to determine what increases are necessary to enforce the housing code.
- The city should press for a massive program of slum clearance in Puerto Rico to lessen the impetus toward migration to New York.

The basic outlines of the report have been endorsed by Mayor Wagner. Mr. Panuch is a lawyer, whose experience in governmental organization includes such ambitious projects, as the organization of the West German government after World War II.



Spillway Dwarfs Mayfield Arch

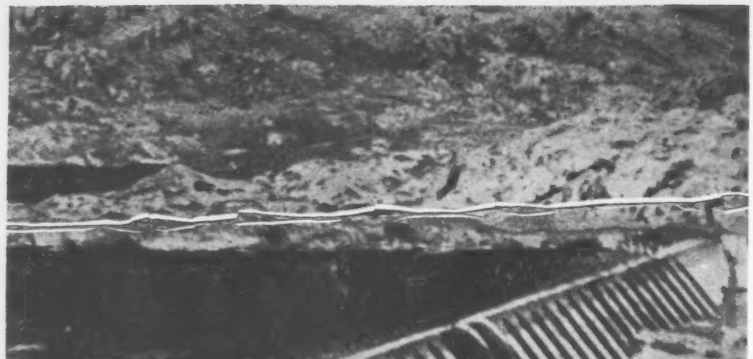
Model of Tacoma City Light's Mayfield hydro project in Washington illustrates the contrast between the narrow main arch dam and its massive spillway section. The dam rises 185 ft in a canyon only 40 ft wide.

Perini Corp., Boston, has started work on the final $10-million contract for the 160,000-kw development.

Water reaches the penstocks (1) through an 860-ft tunnel 37 ft in diameter and then drops to the generators (2) 200 ft below the reservoir's level.

Elaborate accommodations are provided for the Cowlitz River's migrating fish. Those headed upriver are trapped at the barrier (3), turned into the horseshoe ladder (4) and then raised to a flume (5) that carries the fish into the lake (6).

Fish moving downstream are trapped at the tunnel intakes (7), bypass the turbines via a skimmer-like device (8) and continue their downriver journey.



FOCUS OF SPANISH TRIAL, Vega de Tera Dam, is pictured above before it collapsed 15 months ago and destroyed the village of Rivadelago.

Court Convicts Dam Designers

A Spanish court has convicted four engineers of negligence in the fatal collapse of Vega de Tera Dam in northwest Spain early last year.

The director and three staff engineers of the Moncabril Power Co., owner of the dam, were found guilty of neglect and insufficient construction supervision.

Vega de Tera was a new dam, 112 ft high with 28 masonry buttresses and a concrete deck. Seventeen of the buttresses collapsed and a 330-ft section of the dam was swept away. The resulting torrent destroyed the village of Rivadelago and killed 140 persons (ENR Jan. 15, 1959, p. 28).

The verdict reportedly came as a surprise, particularly since the defendants' technical consultant was the world-famous Spanish engineer Eduardo Torroja.

Conviction could cost the engineers their professional licenses and subject them to other unspecified penalties. They are expected to appeal. The case may eventually reach the Spanish Supreme Court in Madrid.

Meanwhile, the court in Zamora, scene of the trial just ended, required the power company to post a bond of $1.7 million to cover possible awards in pending damage suits.

No information is available on other defendants. Civil and criminal charges were reportedly filed against a total of 10 engineers a few months ago (ENR Dec. 17, 1959, p 39).

Fire, No Sprinkler—No School

One fireman was killed and six others critically injured last week battling a half-million-dollar fire in the Overbrook School for the Blind in West Philadelphia.

The central three-story portion of the school—home for 338 blind children—was completely gutted. The fire spread from a third floor employee's dormitory room, at one side of the building, through corridors to interior balconies around a central dome rising over the core of the building.

Firemen were battling the blaze at the third-floor level when an explosion demolished the dome overhead, dropping it and the firefighters to ground level. A fire department lieutenant was killed. The fire then spread through the central part of the school.

Two two-story wings serving as dormitories for the 338 blind students were relatively undamaged and all the students were evacuated.

The school, built in 1899, was of brick masonry wall-bearing construction. A school official said there was no sprinkler system in the building "because there was an ultra-modern, closely attended and constantly inspected fire alarm system."

Philadelphia's Building Code requires sprinklers in three categories—new construction, alteration or new use—but not in buildings existing before May 9, 1949, when the code went into effect.

'61 Road Aid Coming

25% quarterly allocations expected to ease spending

State highway departments will regulate their rate of obligating federal-aid dollars during fiscal 1961 under a schedule similar to, but less onerous than, the control system invoked last October by the Secretary of Commerce for Fiscal 1960. Officially termed "reimbursement planning," the system has been known as "contract controls."

Controls for the year starting July 1 will be slightly less arduous than those now in effect for this year. For one thing, the total of federal dollars will be slightly higher than this year, up $200 million to $2.9 billion for fiscal 1961 and second, the rationing of commitments through the year will probably be at a uniform level of 25% per quarter. In the current schedule the obligation rate is unbalanced; the quarterly allowances are set at about 22, 11, 33 and 33%.

State-by-state allotments for 1961 will be ready soon—probably within three weeks, says the Bureau of Public Roads. Just as in the current year, the total of federal-aid dollars available for obligation in fiscal '61 equals the sum of apportionments made to the states for the Interstate System and the ABC (primary-secondary-urban) systems. For fiscal '61 the states have received $2 billion for Interstate projects and $925 million for ABC construction, making the $2.9-billion total.

Within this limiting total, BPR will allocate obligation authority roughly equivalent to the over-all 1961 apportionment made to each state.

Obligation allowances to the states would correspond exactly with the 1961 apportionments were it not for the fact that some states are behind in committing their federal-aid allocations from past years. BPR will make sure that every state has sufficient obligation authority to use all left-over federal-aid apportionment that otherwise would lapse in fiscal '61.

States must obligate federal aid within two years after the fiscal year for which the aid is authorized. After that time, the state forfeits any unused federal funds.

Last fall, in issuing its first obligation schedule for fiscal 1960, BPR found that four states needed commitment authority in excess of their 1960 federal-aid apportionments.

BPR accordingly adjusted the schedule to give these states what they needed. Authority granted the other states was diminished proportionately, to hold the 1960 obligation total at $2.7 billion. Similar adjustments will be made for '61.

Bids Coming on Big Harbor Expansion

The Port of Los Angeles will kick off a five-year, $37-million expansion and modernization program with the receipt of bids next Tuesday for construction of a unique, $15-million passenger-cargo terminal. The program will increase the port's facilities by one-third.

Among other items earmarked for early completion are three general cargo terminals, costing a total of $16 million; a $3.1-million wharf; a $1.1-million administration building; and some $2 million worth of remedial work.

The staff of Edward V. Dockweiler, chief harbor engineer, prepared the development plan to meet projected increases in the 23.3 million tons of cargo handled annually. Increases are expected at the rate of 500,000 to 900,000 tons per year through at least 1970.

To provide necessary funds for expansion, Los Angeles voters last year approved a charter amendment giving the Harbor Commission authority to issue revenue bonds. A feasibility study done by Tudor Engineering Co. had shown that necessary expansion could not be financed out of current revenues. The harbor's yearly earnings—about $3.5 million per year—will be supplemented by a $24-million bond issue to carry proposed construction through 1965.

The showpiece of the harbor master plan will be the passenger-cargo terminal, which is scheduled for completion in 1962. American President Lines will operate the terminal on preferential assignment by harbor authorities.

It was designed by a joint venture of Los Angeles architects and engineers—Kistner, Wright & Wright; Edward H. Ficket; and S. B. Barnes. It will be a two-story, 1,000x200-ft structure with auto ramps and escalators leading from a parking lot to the second-floor passenger area. There, aluminum gangways, stowed in roof-mounted gantry cranes, will telescope out from the second-floor level to shipside.

At least five of the 14 new berths to be added during the next five years will be for the terminal. The project also includes a large transit shed. Contractors completed upstream dredging of a 1,200x400-ft slip for this project last December to a depth of 35 ft.

Initially, 3,000 linear ft of open-type wharf with a 50-ft-wide concrete apron will rim the slip. Bulkheads will be cast-in-place concrete, and decks will be supported on prestressed piles.

Wharfs and transit sheds will follow patterns that are relatively new to marine construction.

A $4-million cargo terminal, dedicated in January, is regarded as a likely standard for future projects because of cost savings.

Largest project is this $15-million passenger-cargo terminal.

Transit sheds use rigid steel frames and tilt-up walls.

On this project, tilt-up walls were used for the 1,008x200-ft clear span transit shed. Cost was $7.35 per sq ft. Asphaltic concrete pavement on a crushed rock base was used in place of the conventional portland cement concrete floor. A single monitor for light and ventilation (instead of the conventional double monitor) also reduced costs. Total savings on the cargo shed were estimated at $500,000.

Engineers estimated another $500,000 saving on the terminal's 1,280 linear ft of concrete wharf. Key saving here was the use of prestressed piles, instead of conventional reinforced precast concrete piles. Use of the prestressed units resulted in savings in both material and handling costs.

Use of wider bents to support the deck structure also effected savings. Bents on the outboard side of the wharf, tying in with every third main truss of the transit shed, are 14 ft wide. They were used in conjunction with existing 10½-ft-wide bents under the building site. Wharf costs came to $1,200 per linear ft, as compared with previous costs of $1,575.

In an attempt to cut costs still further, Mr. Dockweiler will file a request with the Harbor Commission in April to retain consultants to explore the total problem of economic wharf design.

Projects now under way are of ultra-modern design. One of these is a $1.85-million container terminal being built for Matson Navigation Co. It will have storage capacity for 550 aluminum trailer vans of the standard 24x8.5 x8-ft size. One man will be able to load and unload these containers by push-button control of a 25-ton gantry crane.

Modern bulk cargo handling concepts are typified by Union Oil's $4.5-million supertanker terminal, completed last year. Here, one man can load a 75,000-ton vessel at the rate of 35,000 barrels per hour by means of five hydraulically operated loading arms.

Still another model of automation is the harbor's bulk grain loading terminal, which will be ready for operation this spring.

Grain can be poured into a freighter at the rate of 17,000 bushels per hour and unloaded at the rate of 10,200 bushels per hour.

Interlocked Aluminum for Honeycomb Solar Screens

Honeycomb-patterned solar screens formed of interlocking aluminum extrusions face the Pulaski Federal Savings and Loan Association Building, Little Rock, Ark.

The architects believe it is one of the first installations of its kind in the country.

There are 16 anodized, blue screens—12 of them are 7 ft 4 in. wide and 19 ft 8 in. high, and the four others are 10 ft 8 in. wide and 19 ft 8 in. high. The larger screens weigh 2,400 lb each.

The building was designed by Wittenberg, Delony and Davidson, and is being built by Dickmann-Pickens-Pond Construction Co., both of Little Rock. The screens were made by the Metalfab Corp., Dallas.

Chicago Considers Garages Connected to Rapid Transit

Eleven parking terminals in the outlying areas of Chicago that would feed passengers into elevated-subway routes bound for the Loop are under consideration by the city's Transit Authority.

The terminals are seen as a possible means of preventing over-crowding on expressways and of helping to alleviate present traffic congestion in the Loop and in other sections in central Chicago.

It would cost about $110 million to build the 11 terminal garages to a capacity of 56,000 cars. Six similar parking terminals have been suggested for the outer reaches of the commuter railways that serve the city.

Around the World . . .

• **Opposition for desalting site**—Major opposition to the Interior Department's proposed San Diego nuclear desalting plant may come from the Navy. The proposed site is about two miles from the site of a pier for nuclear submarines. The Navy wants a guarantee that nuclear leakage, if any, will not be blamed on the undersea craft.

• **Block builder**—A $20-million, near block-size commercial center will be built in Minneapolis, Minn., beginning late this year. Central building of the project will be the 500,000 sq-ft, 16-story Cargill office building, with a facade of glass bricks and anodized aluminum.

• **Egyptian runway work**—Cairo International Airport just finished extending its main runway from 9,340 ft to 10,980 ft. The entire length of the runway was covered with reinforced concrete. The $435,000-project was done to enable the airport to accommodate heavy jet airplanes.

• **Catching on?**—Gov. Nelson A. Rockefeller of New York may have started a trend with his bomb-shelters-for-all idea (ENR Feb. 25, p. 17). Massachusetts' Civil Defense Agency is pushing a shelter-program study for new construction and existing construction. And a grand jury in Santa Barbara County, Calif., recommends shelters for new public buildings.

• **Canada hydro record**—For the second year in a row hydroelectric generating capacity brought into service in Canada during 1959 hit a new high. Generating capacity started last year totaled 1,870,000 kw. In 1958 it was 1,800,000 kw.

• **Competition for design**—Architects seem eager to design Chicago's $67-million civic center. So far, 19 firms have submitted proposals for the two 21-story buildings. They will house courts, and city and county offices.

• **Garages go to college**—California's Department of Architecture will ask for bids this spring on a five-level, ramp-type garage at San Francisco State College. The reinforced concrete structure should total over 613,000 sq ft and include several alternates, all involving some prestressing.

• **Replace that divot**—Boston Common will be restored according to a precise topographical plan after completion of the $7½-million underground Common Garage, started last week. Trees and shrubs will be replaced in exact location. And the topsoil will be carefully stockpiled as site clearance and excavation proceed.

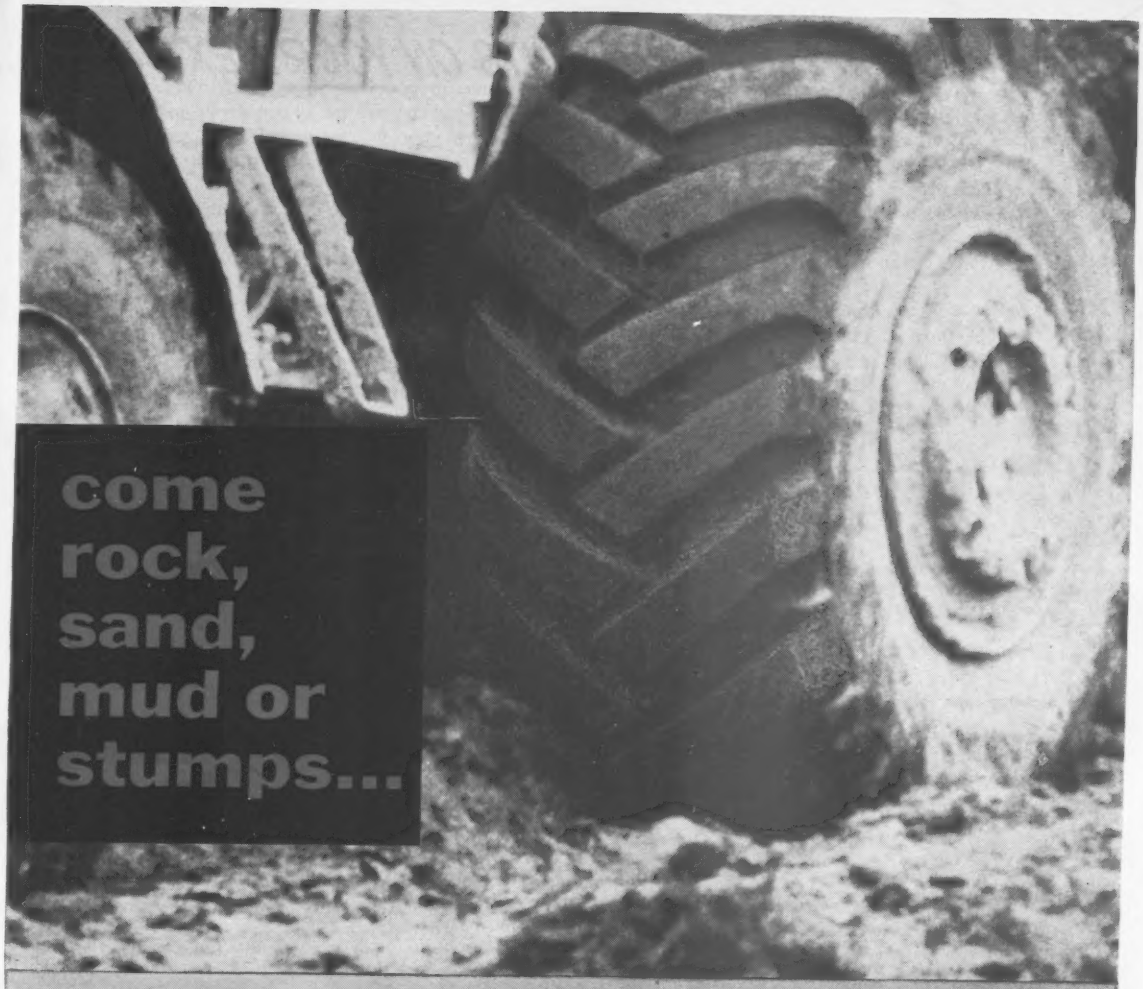
• **No leak in the dikes**—Dangerous snowslides in Loveland Pass, the 11,922-ft summit of U. S. 6 over the Continental Divide, have been diverted into timbered areas by a series of earth-fill dikes running diagonally across the face of the mountain. Bulldozers built up the dikes last summer as part of an experiment by the Colorado Department of Highways. Snowslides in the area have often held up traffic for several hours.

• **By rail to Mt. Isa**—Ford, Bacon & Davis, New York City consultants, have been retained by the Australian state of Queensland to do the engineering, design and construction management work on the $67-million rehabilitation of the Northern Railway. This involves the 750-mile Collinsville-Townsville-Mount Isa line, which serves sheep and cattle ranches and several mines.

• **Houston hotel**—Houston will get a new 28-story, $15-million hotel-office structure. The Sheraton-Lincoln Hotel will contain 10,000 sq ft of office space, 500 hotel rooms in a 25-story tower on a three-story base. Construction is scheduled for this year. Architects are Quinn and Christiansen of Chicago, and Kenneth E. Benntsen of Houston.

• **Detroit medical center**—First stage of Detroit's $100-million medical center (ENR May 31, 1956, p. 84) moved ahead with federal approval of a $4.1-million grant to finance part of the land acquisition cost. Construction of $70-million worth of public and private buildings is planned over a 10-year period.

• **Sign of the future?**—Construction planning in West Berlin shows marked optimism despite what political pundits may say will happen at and after the summit meetings. Right now the city has $17 million worth of municipal building projects either on the boards or moving into the construction stage.



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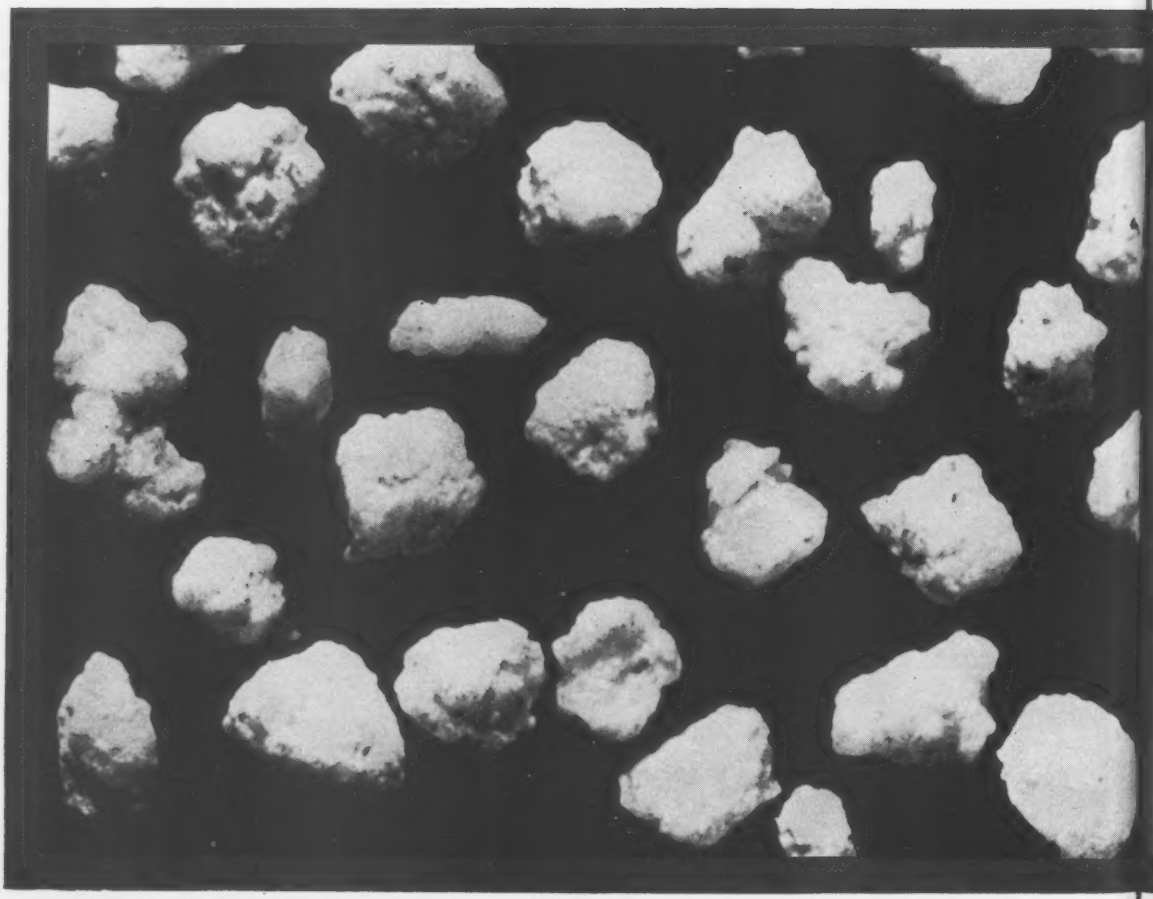
FOR REALLY EFFECTIVE RESULTS ON YOUR NEXT SHOT...

WHICH EXPLOSIVE?

This is a photographic enlargement of Atlas Pellets.



New explosives, blasting agents, and techniques are being developed at an ever increasing rate. Operators are using these developments to find new answers to the old problems of getting more payload work from shovels, trucks, crushers, conveyors . . . all their equipment all along the line. And they are finding that the lowest true blasting costs depend upon determining *which explosive* and which blasting methods combine to give the best breakage, displacement, and control at the lowest overall cost.

For example, are you familiar with one of the newest developments . . . ATLAS PELLETS? They are a new form of ammonium nitrate designed especially for blasting. They are porous, compact particles which have oil absorption characteristics equal to that of prills. Yet they have higher density for more efficient blasting. And they are exclusive with Atlas. But just because they are new, they are not necessarily the best explosive for your operation. Ask your Atlas representative about Pellets, and about the complete Atlas Line. It's his job to help you decide which explosives make the right combination to give you really effective results on your next shot.

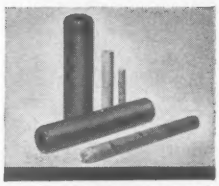
There is only one way to look at explosives costs, and that is: which explosive will give you the most payload service from all your equipment? Our blasting cost chart, slide rules and technical literature are designed to help you do exactly that. Ask your Atlas Representative about them . . . or, write directly to:

ATLAS POWDER COMPANY
Explosives Division, Wilmington 99, Del.

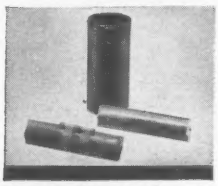
ATLAS EXPLOSIVES

When you use the right combination, all your equipment moves in sooner... works faster... produces more.

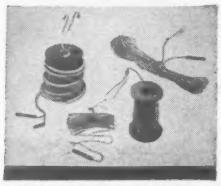
ATLAS PELLETS, a new form of ammonium nitrate, have both the density and sensitivity required for efficient ammonium nitrate blasting.



GIANT GELATINS are for high velocity shattering action. They are advantageous for extremes of wet work and for hard, tight shooting.



GIANT "75" PRIMERS have the wallop required for complete, efficient detonation of both field mixed and plant mixed blasting agents.



ROCKMASTER® electric blasting caps achieve the staggered action which has been so important in producing better breakage and control.

New Job for 1881 Water Tunnel

A curious turn in the 80-year history of a long-abandoned water tunnel in Baltimore is giving it a new job and saving the city a million dollars.

The seven-mile tunnel spent its first half century taking raw water into the city. Now it is about to go back into service carrying filtered water out of the city.

During its first 56 years, Loch Raven Tunnel fed raw water from Loch Raven Reservoir, an impounding reservoir in northern Baltimore County, to the city's Montebello Filtration Plant. But head increases at the reservoir at various times proved too much for the 12-ft bore; it was replaced by a new 12-ft tunnel in the late 1930s (ENR Sept. 12, 1940, p. 90).

Idle since then, the old tunnel will go back to work next summer with its flow reversed. It will carry treated water from the Montebello plant back to Baltimore County. Deep-well turbine pumps at a new pumping station near the reservoir end will pump water from the tunnel into high outlying areas of the county, where recent growth has created serious water supply problems.

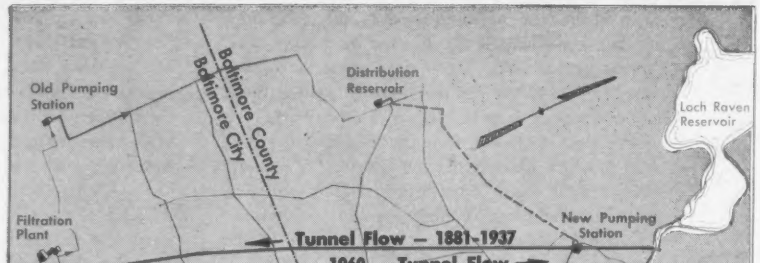
Besides the pumping station, the project includes a feeder main to supply the old tunnel with treated water, and connecting mains from the pumping station to the distribution network.

The project will cost $1 million. An alternate program providing equal benefits would cost well over $2 million. It would require reinforcements to existing pumping stations, nearly six miles of 36-in. (or bigger) surface mains laid in crowded city and suburban streets, a 25-million gallon ground storage reservoir and other construction.

The old tunnel began its long career in 1881. ENGINEERING NEWS RECORD articles of the day (Oct. 22, 1881, p. 428 and May 24, 1884, p. 256) said work began in 1875 and ended in November, 1880. It cost nearly $2 million. The first mile was driven through limestone, most of the rest through hard blue gneiss. About 2½ miles was lined with brick arching. The tunnel slopes uniformly about a foot a mile and runs from 36 to 354 ft below the surface.

Basic credit for the new plan goes to John C. Geyer, sanitary engineering professor at Johns Hopkins University. Noticing that the tunnel passed directly under certain high areas of the county where water shortages occur every summer, he conceived the idea of tapping the tunnel by drilling into it.

Using the old tunnel was first suggested as a temporary measure to serve only until long-range plans could be put into effect. But the idea improved with study. The design engineers, Rummel, Klepper & Kahl of Baltimore, in collaboration with Baltimore County and City engineers, developed a scheme to take the fullest possible advantage of the windfall transmission main. As finally planned, the old tunnel and new pumping station will become permanent parts of the city and county water system.



WITH FLOW REVERSED, old tunnel that brought raw water into Baltimore for 56 years, will start taking filtered water in the opposite direction this summer.

The tunnel lent itself readily to its new role. The site of one of the original construction shafts was well placed as a site for the new pumping station and luckily was still public property and available. The station could thus be located immediately over the tunnel and the pumps dropped directly into it through a new well shaft. At the filtration plant, 5½ miles from the pumping station, treated water could be fed into the tunnel through an existing surge shaft built as part of the original tunnel project.

Water from the treatment plant will flow by gravity into the surge shaft through 1,700 ft of 36-in. concrete pipe.

At the pumping station, two 500-hp, 16-in. deep-well turbine pumps will be suspended in a new well 10.5 ft in diameter and extending 106 ft from ground level to the tunnel. Each pump will have a capacity of 4,170 gal per min at a discharge head of 375 ft. Two additional wells will be drilled and cased for future accommodation of pumps with capacities of 10,000 gpm or more.

The section of tunnel between the reservoir and pumping station will be sealed off with a concrete plug at the pumping station. As a check against leakage, water will be metered both into and out of the tunnel.

Chlorination equipment will be installed at the pumping station.

The new pumping station, Cromwell, will work in conjunction with Guilford, an existing one several miles away, to supply one service zone. Guilford, which has pumped all the zone's water supply up to now, will continue to be the main supply. Cromwell will be used at first only to boost pressures during high-demand periods. Towson Reservoir (see map) will float on top of the system.

The Cromwell pumping station will be manually controlled at first by an operator in the Guilford station. The control center at Guilford will receive signals on system pressures at two critical points, pumping rates and discharge pressures of the Cromwell pumps, and water levels in the Cromwell shaft. Eventually, Cromwell operation will be controlled automatically by water-level fluctuations in elevated storage tanks.

The pumping station and distribution piping are projects of the Baltimore County Department of Public Works, under A. B. Kaltenbach, director and chief sanitary engineer, and Jerome B. Wolff, assistant director. The tunnel and appurtenances inside the city limits are under the Baltimore Bureau of Water Supply and L. V. Schuerholz, water engineer.

Contractors on the job are A. A. Dyer Co., Baltimore, Cromwell pumping station, $370,000; Leo Butler Co., College Park, Md., pump shaft at Cromwell, $23,400; Ruth Engineering Co., Baltimore, electrical substation at Cromwell, $22,700; Interstate Construction Co., Baltimore, supply line to the tunnel at the filtration plant, $74,000; Marocco Construction Co., Baltimore, distribution main, $220,000. Other distribution main contracts will be let soon.

WHEN CITIES PLAN INDUSTRIAL GROWTH

it pays to specify Vitrified Clay Pipe

SANTA PAULA, CALIFORNIA, already a bustling center of agricultural activity, is building to share in California's phenomenal industrial growth. To accommodate new industry and meet the needs of a growing population, Santa Paula recently completed a bond-financed sewer expansion project, using Vitrified Clay Pipe exclusively. Over 6 miles of Vitrified Clay Pipe were installed.

Like Santa Paula, growing communities everywhere need the permanence and safety that only Clay Pipe can provide. Clay Pipe is the only pipe that never wears out . . . does not rust, rot, corrode, or crumble. And with its new research-developed, factory-made joints, Clay Pipe is faster and easier to install than ever before.

When your community plans new sewerage facilities, be sure to consider the exceptional advantages of Clay Pipe. Its exclusive long-term guarantee is your assurance of permanent, maintenance-free service. Only Clay Pipe has *all* the features you can trust to handle industrial growth.

CITY OFFICIALS: James E. Leary, *Mayor;* Edwin C. Bixby, Ernest H. Oman, Ralph B. Crawford, Reece B. McCalister, *Councilmen.*
CONSULTING ENGINEERS: J. M. Montgomery Engineering Co. **CONTRACTOR:** N. P. Van Valkenburgh Co.

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Old four-span bridge had wrought iron girders.

One span carried traffic during rebuilding.

New Life for an 85-Year-Old R

Contractors and engineers teamed up to give an 85-year-old railroad bridge across the Avon River near Evesham, England, a new lease on life. Cure of the elderly structure's assorted ills called for a combination of ingenious design and complex construction.

Before reconstruction, the ailing bridge showed these symptoms:

- High working stresses in four wrought iron, deck-type, plate girder spans.
- Doubtful support from two remaining cast iron cylindrical pile piers. Originally, the center pier also was composed of cast iron piles; it had been replaced by a masonry pier in 1919 because of excessive settlement.
- Timber decking subject to rapid deterioration under excessive differential deflections between the loaded and unloaded spans, further complicated by the presence of a crossover on the bridge.

Treatment prescribed by the engineers included these major steps:

- Remove the old pile piers, making two spans instead of four.
- Design the new spans as welded plate girders with precast concrete welldeck units resting on short precast concrete pads dowelled to the top flanges.
- Provide a standard deck, with 6 in. of ballast and cross ties; and relocate the crossover off the bridge.
- Strengthen the center masonry pier by installing a prestressed concrete pier cap.
- Strengthen the old abutments to support modern loads.

Engineers came up with an economical design of the new girder spans, including an unusual treatment of the bearings on the center pier.

Each pair of parallel 98-ft 8-in. girders under each track has complete lateral bracing between the top flanges as well as necessary sway bracing. However, each track is supported independently, there being no cross connection between the girder pairs.

At the center pier, abutting girders overlap one another in a vertical plane. By this arrangement, the end reaction of one girder is transmitted through bearing stiffeners to the other girder; the combined end reactions are transmitted to a fixed bearing on the pier. These bearings incorporate mild steel knuckle pins. Engineers provided bronze plate sliding bearings at the abutments.

During construction one track carried two-way traffic while work was being done on the opposite side. When one span was completed, traffic was switched over and work began on the second span.

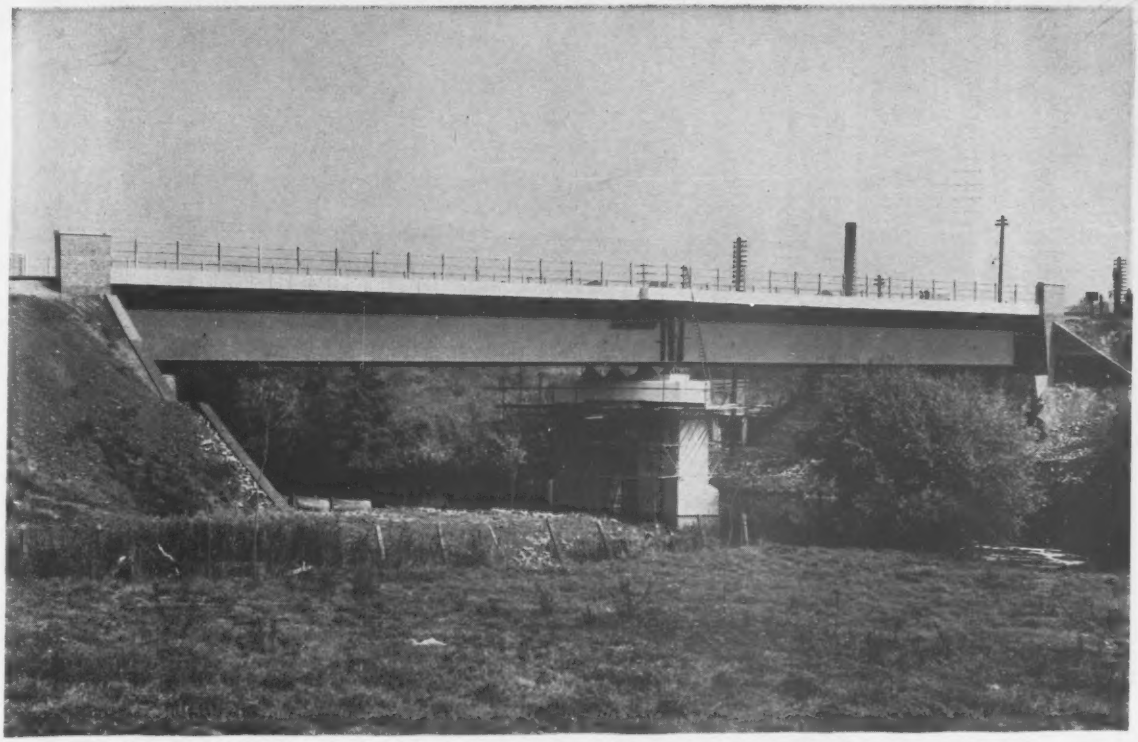
This work plan had a direct relationship to the method used for strengthening the center pier.

The 40-year-old center pier was built with a 10-ft masonry arch near the top. This arrangement satisfactorily accommodated the 4-ft 6-in. deep girders of the original spans. But the new girders are 7 ft. 6 in. deep. Analysis showed that it would be difficult to modify girder depths over the pier and still retain centrally placed bearings in that location.

Engineers decided that the masonry had to be cut down below the level at which the reactions could be distributed without overloading the arch.

Designers therefore strengthened the pier by providing a precast prestressed concrete pier cap.

Workmen cast and erected the pier cap in two identical parts; a gap of 2 in. was left between the two halves for subsequent prestressing. Each half of the cap weighs 30 tons and was reinforced to carry reactions from single-track loads before prestressing. Workmen placed the halves of the pier cap



Rebuilt bridge has modern steel girders, strengthened center pier and only two spans.

Old RR Bridge

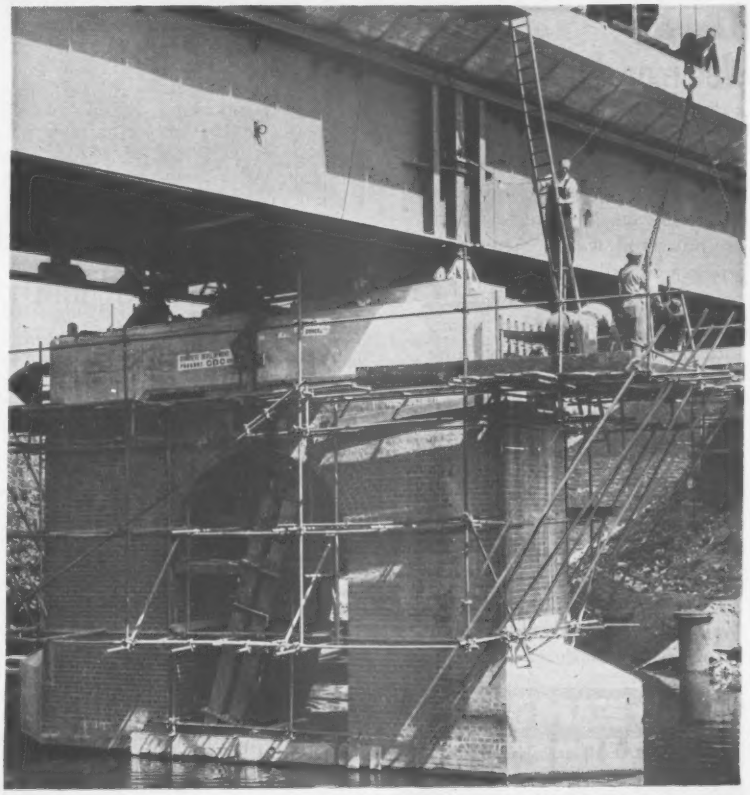
on timber cribbing over arched portions of the pier.

The arch portion of the pier was strengthened during erection by the use of temporary struts. In the first stage, four heavy timber struts were installed diagonally.

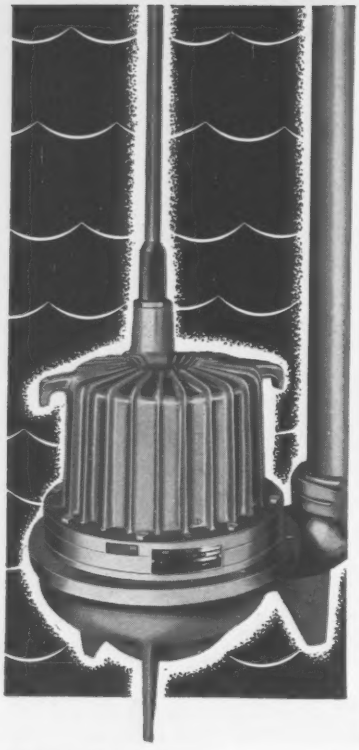
Engineers felt that the temporary struts were needed because of eccentric loads placed on the arch by rail traffic and by a railroad crane used to handle the heavy precast pier cap sections. In preparing the pier for the first spans, workmen had to remove the masonry almost to the arch ring to place the first half of the pier cap. The arch, which was already cracked through the crown, was assumed not to be effective.

When workmen had completed one span, struts were reversed and additional struts added to take increased loads on the center pier because of the change in design from four spans to two.

For prestressing, workmen cast 14 ducts—8.5 in. by 3 in. in section—in the pier cap halves, which were made of 8000-psi concrete. Before prestressing, they passed a bundle of sixty-four 0.276-in.-dia wires through each duct. Prestressing was done by the use of jacks, tapered wedges and plates with load being applied to pairs of wires in a



Overlapping girders are supported by common bearings on pier.



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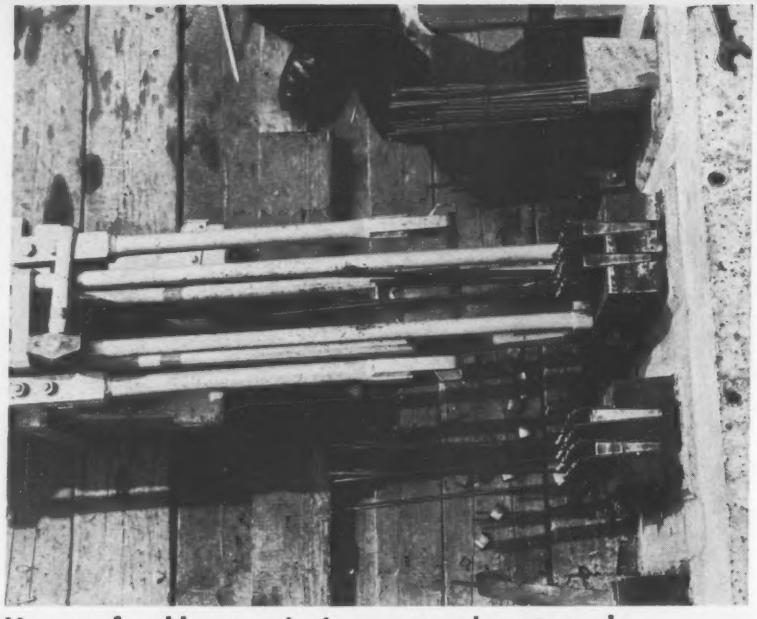

New cap for old center pier is precast and prestressed.

specified order. Three jacks were used at a time; the wires were stressed from one end only.

After stressing, workmen rammed a dry, rich concrete into the 2-in. gap between the halves. Cement grout was forced under pressure into the ducts. The wedges and plates were encased in 6 in. of concrete covering the ends of the pier cap. Engineers designed the prestressing system in such a way that the center of the prestressing force was located 5 in. below the centroid of the pier cap. After stressing, the cap had a camber of about ½ in.

Final step in transferring the load from the cap to the pier—clear of the arch section—was removal of the timber cribbing. Workers also removed the temporary strutting that had supported the arch section.

Engineers found it necessary to strengthen both of the old abutments. The original timber structure, built in 1852, was supported at the ends on masonry piers founded on large stone blocks below ground level. Brick abutments had been added in 1875, with foundations at a higher level. Later, the tops of the abutments cracked and moved out of plumb.

To strengthen the abutment on the Evesham side of the river, workmen demolished the old abutment top and laid a concrete raft over the old masonry pier. New concrete caps and a retaining wall of brick-faced concrete were built to support the new girders. Engineers also strengthened the foundations of the old brickwork by adding a new concrete foundation. The new foundation was carried down to the level of the bottom of the original masonry pier and reinforced with old rails.

Engineers directed the installation of the main girders one at a time. Workmen made the connections with ⅞-in. high strength bolts tightened to a torque of 390 ft-lbs.

On the Worcester side of the river, the abutment was strengthened in a similar manner, but the original foundations were not as deep as on the Evesham side.

There was neither riveting nor welding on site. The surface of the steelwork was prepared by pickling (which removed all millscale) and painting two priming coats, red lead, and red and white lead respectively. The under and final coats of micaceous iron ore paint were applied in the shop before delivery. In this way, the amount of work on site was kept to a minimum. The contact surfaces of the parts joined with high strength bolts were not painted.

The bridge was designed in the Steelwork Office of the Western Region of British Railways, under the direction of M. G. R. Smith, Chief Civil Engineer. Fairfield Shipbuilding & Engineering Co., Ltd., of Chepstaw, fabricated the girders and cast the concrete pads on the top of the main girders. Concrete pier caps were cast by the Concrete Development Co., Ltd., which also did the prestressing at the site. The reinforced concrete well-deck units were cast in the Taunton Concrete Works of the Western Region. Railway forces did the on-site erection under the direction of A. W. McMurdo, District Engineer.

New Model H-120 Hough "PAYLOADER" built to scoop 20% more load because of the great strength of USS MAN-TEN and "T-1" Steels.

USS "T-1" and MAN-TEN Steels cut 1 ton of dead weight from this bigger PAYLOADER®

Two thousand pounds of weight have been chopped from the front end of this new Hough H-120 "PAYLOADER" by designing with USS "T-1" and USS High-Strength Steels. Result: one ton more capacity . . . increased reach and dumping height . . . better balance . . . stronger construction . . . lower operating costs.

This is another case where the greater tensile properties of the high-strength steels and the *extra* high strength of USS "T-1" Steel (100,000 psi minimum yield strength) made possible a superior designed machine. About 4,000 pounds of USS "T-1" Constructional Alloy Steel in ½" and ¾" plate and ½" x 5" bars are used in the boom arms, rocker arms, and bucket attachment brackets. The bucket is 5/16" USS MAN-TEN Brand High-Strength Steel—a 50,000 psi minimum yield point grade.

The bucket lift assembly was designed to a working stress, which, multiplied by a reasonable safety factor, comes up to the full minimum yield strength of "T-1" Steel. The 2,000 pounds of weight saved went directly into increased payload capacity—20%. The new "PAYLOADER" can handle 12,000 pounds instead of the 10,000 pounds of the experimental design. This is just what the customers wanted. No other steel offered such a high ratio of strength to weight.

The first 150 of these Hough tractor shovels are already giving outstanding service. More are being built. The combination of USS "T-1" and MAN-TEN Steels in the new "PAYLOADER" provides high strength with low total cost, lighter weight and freedom from maintenance.

For more information on any of these USS special steels, write to United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

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New H-30 PAYLOADER®

COMPLETELY NEW WITH FOUR-WHEEL DRIVE

This all-new tractor-shovel is the smallest "PAYLOADER" ever made with 4-wheel drive. It has an operating capacity of 3,000 lbs. and is available with 1 cu. yd. bucket.

In spite of its compact size and modest price the Model H-30 has the latest improved features and refinements of the larger "PAYLOADER" units and has many performance advantages not found in any other machine.

If you want all the advantages of Hough 4-wheel drive performance and value to fit a tight budget ask your "PAYLOADER" Distributor to show you the Model H-30.

MORE POWER • MORE REACH AND MORE DUMPING HEIGHT

FAR AHEAD OF ANY MACHINE IN THIS CLASS

Full of exclusive features for better performance

More Power: 77½ hp heavy duty engine provides more power than any comparable machine.

More Dumping Clearance: 8'-½" clearance under bucket edge, dumped — even more than some larger machines.

More Reach: 32" dumping reach ahead of front tires — twice the reach of any comparable machine.

More Reliable Brakes: 4-wheel hydraulic brakes instead of 2-wheel for equal braking forward or reverse. Sealed to keep out dust and dirt. Separate parking brake on drive shaft.

Full Power-shift Transmission plus torque-converter: Provides three speed ranges in each direction. All shifts in either direction can be made "on-the-go" with a flick of the fingers. No need to stop for any "range" shifts.

More Operator Visibility: New slope-down front end styling gives the operator full vision of the bucket digging action without leaning over the side.

More Safety: All boom structures are positioned ahead of and away from the operator. Standard ladder with hand rails makes it easy and safe for the operator to get on and off.

Closed, Pressure-controlled Hydraulic System: Oil reservoir is closed and pressurized to exclude dirt and dust — includes built-in cartridge type oil filter and a fine mesh strainer.

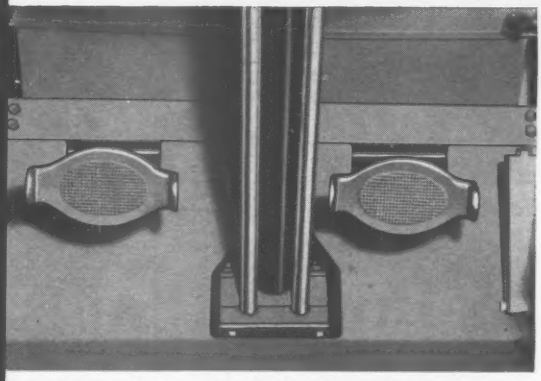
Positive Oil Cooling: Separate fan-cooled oil-to-air radiator assures positive cooling of the transmission and torque-converter oil.

More Accessibility: Compartment on left side with quick-opening cover provides easy access to the battery and all instrument connections. Fuel tank and transmission can be checked and filled from ground level.

Steering-axle Drive Disconnect: A lever in the cab enables the driver to disconnect the rear (steering) axle-drive for over-the-road travel or whenever 4-wheel drive is not needed.

HUSKY BOOM AND POWERFUL BREAKOUT

Boom arms of Man-Ten steel combine exceptional strength with light weight. A single long-stroke hydraulic ram with a high-leverage linkage to the bucket develops powerful bucket break-out action for tough digging assignments.



"OPERATOR'S CHOICE" BRAKE CONTROLS

This exclusive "PAYLOADER" service brake control provides the operator with instant choice of braking with the transmission engaged (left pedal) or disengaged (right pedal) without manual effort.

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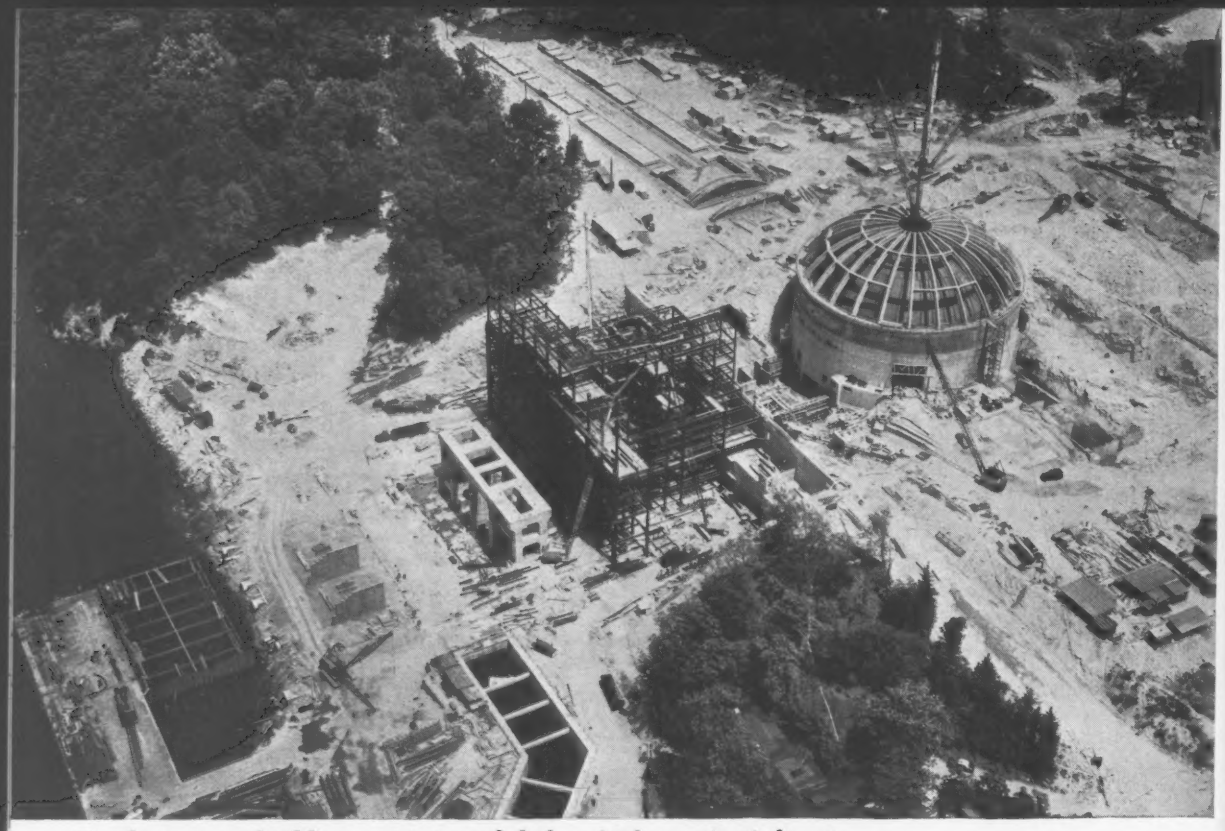


Circular reactor building, cut into rock ledge, is the project's heart.

A-Power Plant Takes Shape on the Hu

Twenty-five miles north of Manhattan, Consolidated Edison Co. of New York is building a 275,000-kw atomic power plant at Indian Point on the Hudson River.

The project represents an investment of $100 million by the utility, including site, construction and equipment costs. A measure of the job's size, as well as the extensive planning that has gone into the project, is the figure of $9 million spent on research and design before a construction worker ever arrived at the site.

The plant is going up on—and in—a solid ledge of dolomite that rises sharply from a narrow shelf beside the Hudson River. While the turbine-generator portion of the plant is on level ground next to the river, the reactor structure, its service buildings and all pipe and control trenches are cut into the rock ledge above and behind the conventional portion of the plant. The foundation contractor removed 300,000 cu yds of material to make a 200-ft-dia hole for the reactor structure—over 250,000 cu yds of it was rock.

In this pit rests a 180-ft-dia concrete cylinder forming the outer shield of the reactor structure. Its 5½-ft-thick walls stand 90 ft high, topped by a heavy precast concrete dome. Inside is a spherical carbon-steel vapor container, 160 ft across, that will enclose the plant's reactor.

This reactor structure has served as the focus of three separate construction operations at Indian Point.

On one side, away from the river, the contractors set up their reinforcing bar and form yard. To the north, a precasting yard has turned out concrete ribs, struts and panels for the reactor's dome roof. And on the south side, the sphere fabricators installed their special equipment for welding panels of the steel vapor container. All three operations are literally within reach of the reactor structure itself.

• **Shield walls**—Starting in the form yard, carpenters made up 8x12-ft curved panels of plywood backed by framing cut to the proper radius. Shifted to the reactor pit, these were bolted into 12x24-ft sections to form the shield wall.

Crews concreted the structure in five segments around the 535-ft circumference. Eight lifts of each section completed the 90-ft-high wall. When each 266-cu-yd-pour was finished, panel sections were lifted to the next level with a curved picking frame hung from the 150-ft boom of a truck crane located outside the reactor walls.

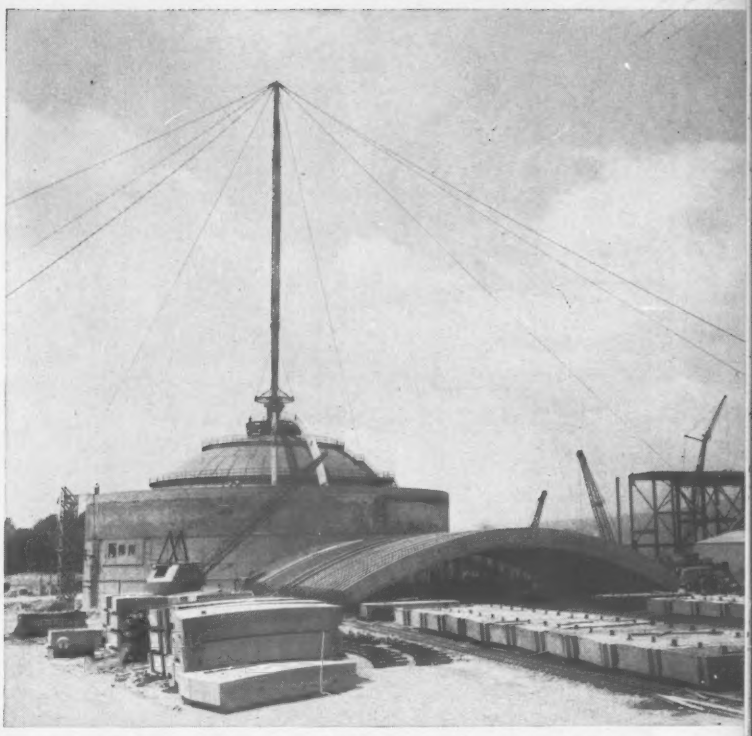
First 67 ft of the structure is 5 ft thick; above this point there's a haunch on the inside face of the wall thickening it to 7½ ft. The object: stiffen the huge cylinder and provide a wide seat at the top for the heavy dome structure.

• **Casting yard**—While the reactor structure went up, an almost independent construction job was underway on its north side. Here, crews cast the 24 half-arch ribs plus the struts and "plank" for the reactor dome. All told, more than 7,000 tons of precast material came out of the yard (see p. 43).

• **The plate farm**—On the other side of the reactor, Chicago Bridge & Iron Co. set up its steel-plate fabricating yard with a 150-ft-high guy derrick as a center point. Around the derrick and within reach of it were plate stacking area, welding tables, X-ray photography section and panel storage area.

Largest size plate that could be shipped to the job was 10 x 35 ft. CB & I welded these sections into four-

Shield wall rises 90 ft in eight lifts.



To one side, precasting yard turns out dome parts.

he Hudson

plate panels at the job for assembly inside the reactor structure. Plate for the sphere varies from 0.889 to 1.5 in. thick.

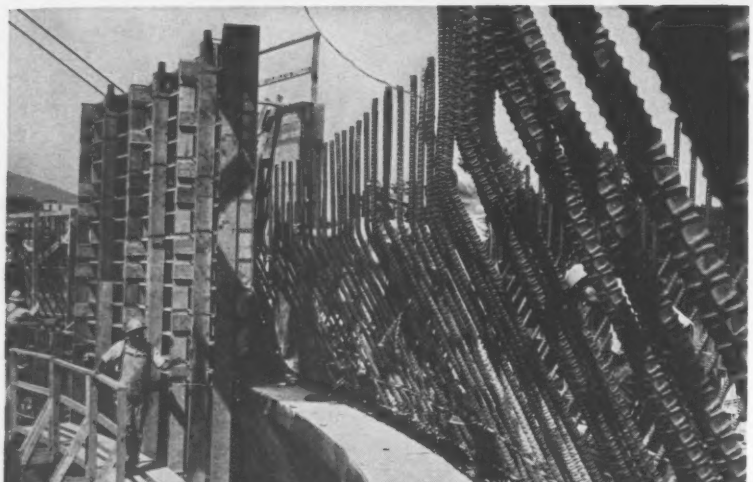
Tilt tables developed by CB & I allowed fast, uniform welding. The "tables," one convex, the other concave, are large frames set on oversized gimbals. As automatic welding machines crawl across the plate joints, the entire frame tips to keep the weld area level. Fabrication of a typical four-plate panel went like this:

Crews laid out four plates on the concave table with the guy derrick and welded studs on both faces of each plate near the edges to be butt welded. Pullers clamped on the studs held the sections while short tack welds were made by hand to keep the plates properly aligned. Then pullers and studs came off. With one man running the automatic welder on top and a checker below the table to watch the bottom of the seam for burn-through, continuous butt welds were run to join the plates permanently.

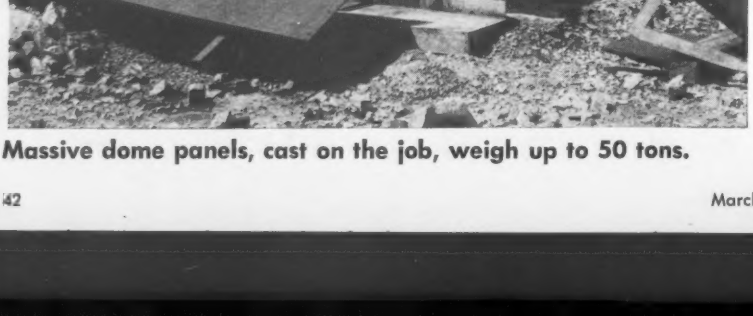
After running all the seams on one side, crews flipped the panel over and onto the other table with the guy derrick to weld the seams on the other

Crews fabricate steel vapor container beside the reactor.

Tilt tables keep big plates level as welders run joints.



Heavy shield wall fattens to provide seat for dome.



Massive dome panels, cast on the job, weigh up to 50 tons.

side. From the second tilt table, panels travelled over to be X-rayed and moved on to storage stacks.

The construction yard layout paid off during sphere assembly and dome erection. The plate stacking area south of the reactor and the precast storage section to the north were within easy reach of a central tower-supported guy derrick erected at the center of the reactor strutcure.

This consisted of a tubular-steel tower, 7½ ft across, rising 175 ft from the rock base within the shield wall. On the tower, CB & I erected a 170-ft-high guy derrick to reach out for sphere panels stacked in the welding yard. Rated at 100-tons capacity, its maximum lift was 70 tons at 100 ft.

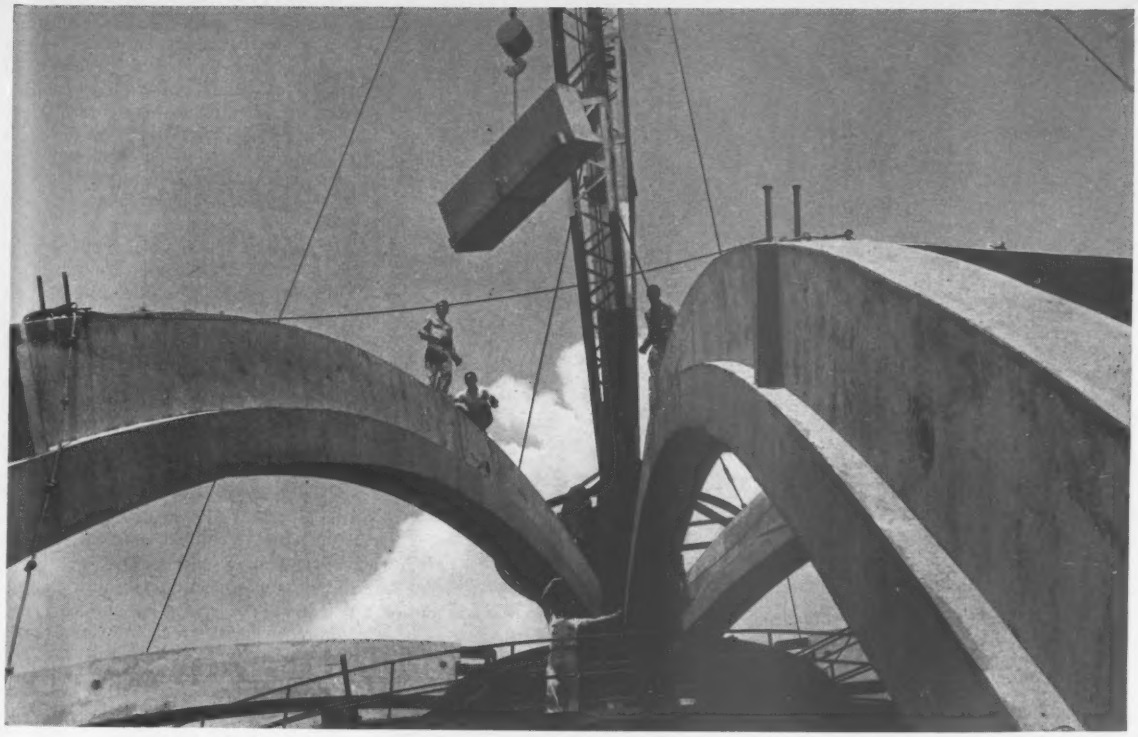
The completed sphere stands on twenty 18-in.-dia tubular steel columns dropping from its equator to a large circular step just inside the foot of the shield wall. Sphere assembly began at the equator, worked down to the bottom first, then up from the equator toward the top. A three-ft space between the sphere bottom and the rock below was grouted with concrete after final pressure testing of the container.

The center tower actually served two purposes: (1) as a base for the erection derrick above it, and (2) as a supporting centerpost for construction of the roof dome. Around the tower, 15 ft below its top, a steel-frame collar cantilevered out to a diameter of 35 ft. Dome ribs rested on this tower collar during roof construction.

After the last section of sphere plate was placed, welded and X-rayed, the guy derrick, extending through top and bottom openings in the sphere, shifted to the job of placing the concrete dome. But one operation remained before dome erection could start.

In the thickened, top portion of the shield wall, a 3-in.-deep chase was cast extending 15½ ft down the outside face of the wall. Workmen wrapped prestressing wire around the wall in this chase from a power driven trolley platform hung by outriggers from an 8-in. I beam track running around the interior top edge of the wall. Over 2,500 wraps of wire in six layers were laid on with a stress of 150,000 psi. Initial wire size of 0.192 in. reduced in the process to 0.174 in. Pneumatic mortar covered the wire between layers and sealed the finished wrapping.

General engineering for the Indian Point project is by Con Ed's own engineering department. Babcock & Wilcox Co. handled nuclear design and research with Vitro Engineering Co. as consultants. Foundation contractor was Poirier-McLane Corp., Yonkers, N. Y. Walsh Construction Co., New York City, constructed the shielding wall and dome.



. . . Here's How They Built the Dome

By William Hershleder

Design and construction of the concrete shielding dome over Con Edison's Indian Point, N. Y., power reactor has been a project in itself.

Engineers selected a precast dome because it is the most economical design and can be erected quickly. Concreting the dome in place—either before or after the steel reactor sphere was built within the structure—would have been delayed by construction of the concrete shield wall. And shoring for a cast-in-place dome would have been prohibitively expensive, since the steel sphere could not carry any of the construction loads.

With a precast dome, work could proceed on both the concrete shield wall and steel reactor sphere while crews fabricated the dome sections, eliminating wait time between stages of construction.

Design requirements called for a minimum 2-ft-thick concrete shield over the reactor sphere. And weight of any single element was limited to 65 tons.

The key here was Chicago Bridge & Iron Co.'s sphere erection tower rising through the center of the reactor structure. On top was a guy derrick rated at 70 tons on a 100-ft radius. Because this derrick reached just beyond the concrete shield wall, the builder had to move dome sections right up to the side of the structure for lifting.

Specifications required that Walsh Construction Co. precast the 264 dome parts at the site. Involved were: 24 ribs, two rings of struts totalling 48 pieces and 192 heavy plank sections.

The 24 ribs—main load bearing elements of the dome—are the heaviest units, at the maximum allowable 65 tons each.

Dome geometry is unique. It is neither a true sphere nor a surface of revolution. Its shape, in section, is a curve determined by the thrust line of the ribs acting as half of fixed arches. Each 86-ft-long rib acted first as a simple beam springing from the top of the circular shield wall to a temporary, steel framed circular platform cantilevered out from the top of the derrick tower. After the dome was completed, these ribs took on the function of a fixed arch, running continuously from side to side of the shield wall across the dome top.

Shaped like inverted Tees, ribs vary in depth from 4 to 5 ft. Bottom flanges run from depths of 1 ft 3 in. to 2 ft 3 in. Web thickness is constant at 18 in.

Planks carried on the rib flanges are trapezoidal in plan, with cylindrical top and bottom surfaces. All joints between planks and between planks and ribs or struts are lapped, eliminating any line-of-sight path through the dome structure. One-inch-wide, pressure grouted joint separate the components.

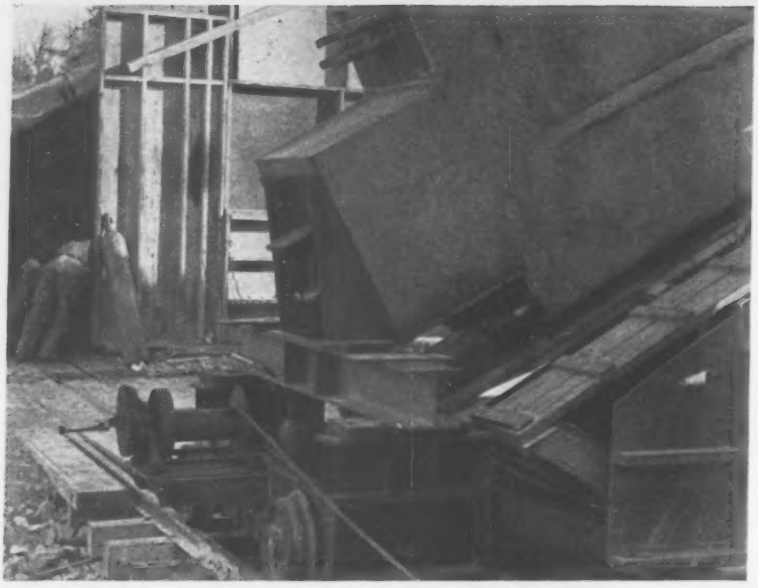
Rigid forms were a must for accurate casting of these large, complex shapes. Concrete Accessories Corp., Zelienople, Pa., designed and fabricated plate steel forms for all the elements.

Since the rib curve couldn't be expressed in the form of an equation, the form makers laid out a rib on their shop floor at half scale from a series of coordinates taken from Con Edison's design drawings. Then they laid out planks and struts along the rib and measured horizontal radii from the vertical axis of the dome to each corner of individual struts and planks. These values let them compute plank and strut length perpendicular to the ribs. At the same time, they made chord measurements to shape rib soffits and falsework.

Shop crews made rib forms in five sections. The soffit and its supporting falsework formed a single rigid unit. Two panels made up each side wall.

Form panels are ⅜-in.-thick plate with stiffening ribs at 12 to 16 in. c-c.

Mr. Hershleder, formerly with Walsh Construction Co., is a consulting construction engineer.



STEEL BRACKET holds bottom end of rib on dolly. Protruding WF section later carried rib on adjustable bearing plate during erection.

LEVER BEAMS lift top end of rib to avoid interference with reinforcing steel. Ribs moved on the dollies from forms to storage and later to the reactor.

Lag bolts tie the rib haunches to the soffit form while cross ties with turnbuckles hold the tops and allow careful adjustment to meet the close tolerances for each section.

Strut and plank forms were made up the same way, with steel panels, lag bolt joints and adjustable ties.

At Indian Point, the casting yard was set up next to the reactor structure along a double set of rail tracks. These four parallel sets of 30-in.-ga track were spaced 30, 24 and 30 ft apart to handle the heavy ribs and plank sections. Walsh engineers felt the track system was more economical than pairs of cranes, considering the large number of precast units.

Ribs were cast and stored near the reactor. Large planks were made at the further end of the track system. Struts and lighter plank were cast and stored off to one side of the yard.

With this casting yard, just one crane set reinforcing, handled concrete, moved light plank sections and shifted dollies from track to track.

Four-wheeled dollies with steel channel box frames rolled the ribs and planks from casting beds to storage and from storage to the lifting point outside the reactor structure.

Concrete for the dome sections was required to have 5,000 psi strength at 28 days. Ribs were lifted off their forms after 14 days and planks were stripped after seven days.

Seating of each rib in its pocket on the shield wall received special attention. Since each rib forms half a fixed arch in the final structure, the lower end must provide continuity with the wall. This meant lapped, joined reinforcing steel. But the builders set steel short in both the rib ends and wall pockets to reduce interference during erection. The splice was made later by welding short lengths of steel between wall and rib bars. A continuous in-line splice was assured by setting reinforcing through templates at both the wall pocket and rib end.

Another problem was supporting the rib at proper elevation on the wall. This was solved by embedding a short length of WF beam in the rib end and seating it on an adjustable bearing plate in the wall pocket.

Erecting the precast ribs followed a sequence designed to limit unbalanced loading.

Crews placed the ribs with the guy derrick in groups of four, one pair opposite the other on the wall top and erection tower frame. Bracing struts went between the pairs of ribs and then another four ribs went up at right angles to the first four, and so on until the entire 24 ribs were in place and braced.

Next, welders spliced the reinforcing steel between ribs and wall top and laborers placed concrete in the wall rib pockets.

At the top center of the frame, crews set forms for a reinforced concrete compression ring to tie the ribs into their designed function of a rigid arch dome. This ring is 28 ft across with an inside diameter of 20 ft and a depth of five feet.

When the ring was cast, the entire dome still sat on the cantilevered frame at the top of CBI's erection tower. Shifting the dome load from the tower was done this way:

Twenty-four hydraulic jacks, operated individually, were set up between the dome ribs and lower portion of the tower frame. The jacks picked up the dome load from the framing beneath its crown while crews removed steel framing where the ribs rested during erection.

With this upper platform framing gone, the jacks were released, loading the arch structure of the dome and releasing all load from the tower. Total movement when the jacks let go was about one inch. The dome frame deflected down $\frac{3}{8}$ in.; the steel erection tower, now unburdened, rose $\frac{1}{2}$ in. at its top.

Plank erection followed. The units were placed in complete rings around the dome before proceeding to the next ring. And crews followed a sequence of erection to load the dome frame evenly.

There are eight rings of plank. First in place was the bottom ring, next to the shield wall. The ring just above it came next. From there crews shifted to the seventh ring, near the crown. The

(*Story continues p. 46*)

How to choose the right bonding company for every job
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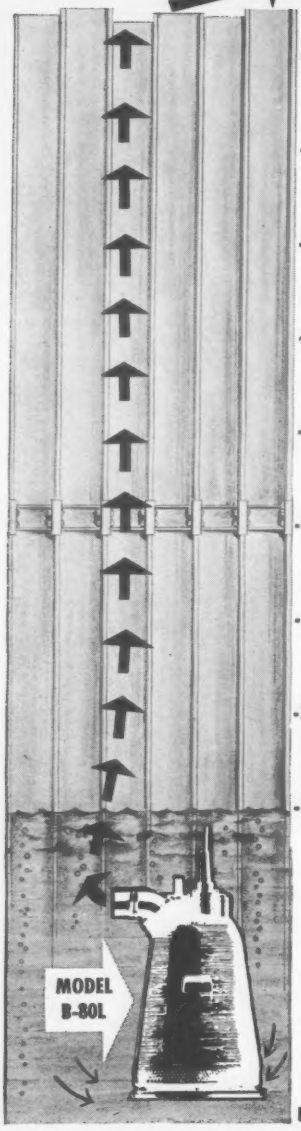

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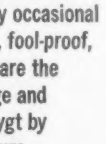

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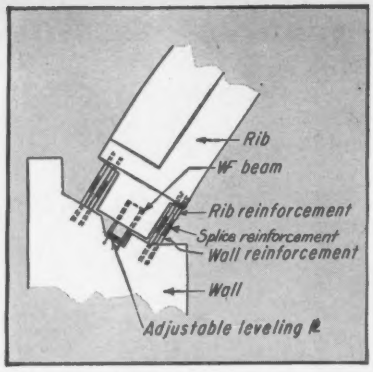


RIB-WALL JOINT was set with leveling plate, then crews welded reinforcing.

remaining rings went in this order: third, eighth, and finally fourth, fifth and sixth. Within each ring, individual planks were placed in an opposite numbers sequence similar to that used for rib erection.

Last step in construction, after the erection tower was dismantled, consisted of casting a 2-ft 9-in.-thick concrete plug in the center of the compression ring.

Sledge Hammer Gives Way To Mechanized Post-Driving

Albert Reed, a laborer for the New Jersey State Highway Department, reasoned one day that there ought to be an easier way to drive steel posts than with a sledge hammer.

There wasn't, so he invented a method that was not only easier, but quicker and cheaper. He devised an unpointed bit that would fit into a pneumatic hammer and a steel collar that would fit over steel posts.

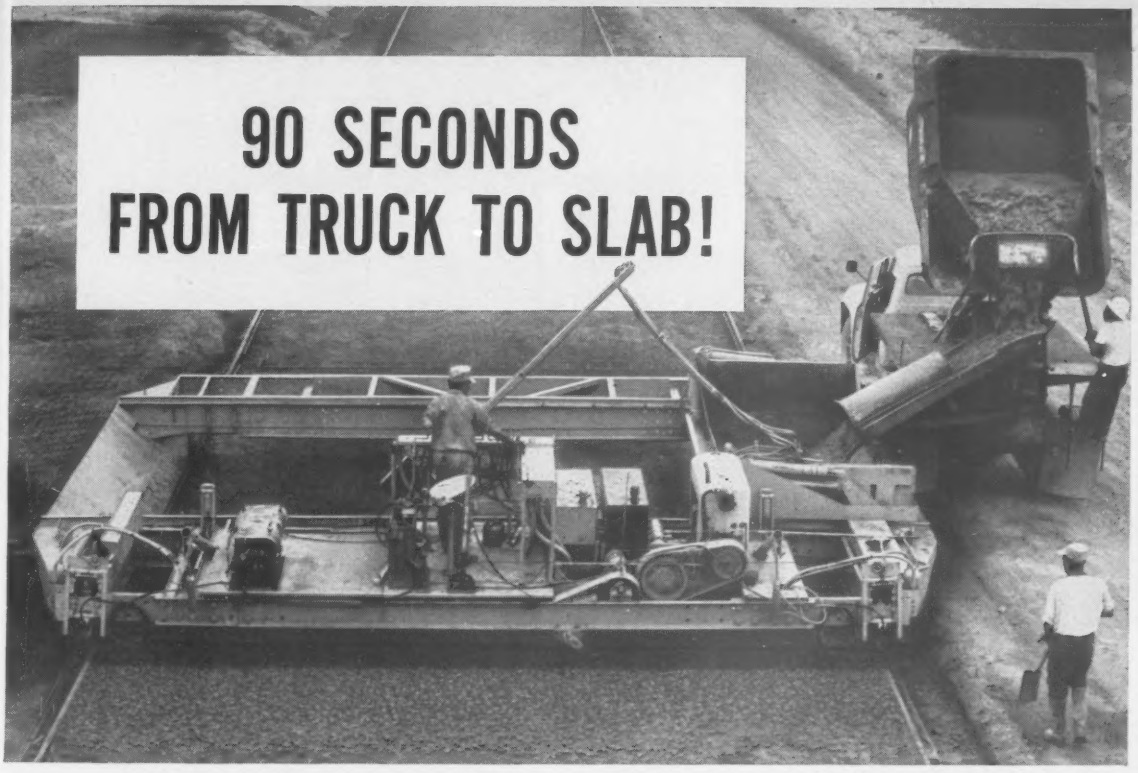
These two items in combination with a pneumatic hammer can drive steel posts into the ground eight times faster than a man-powered sledge hammer.

The collar is a short piece of iron pipe shut flat at one end, shaped somewhat like an artillery shell casing. The bit is hexagonal.

One workman holds the post in position, the collar placed over the top of it. Another workman standing on an adjacent truck operates a pneumatic hammer. The bit striking the collar drives down the pole.

A crew using this device can place as many as 250 posts a day through ground frozen to a depth of 8 to 12 in. The department expects to save $3,400 in labor costs in the first year that Mr. Reed's invention is used.

The Department may use the Reed apparatus to install hundreds of snow fences throughout the state. But it will be expensive to supply crews all over New Jersey with pneumatic hammers.



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Portland cement modified with Dow Latex shows remarkable durability, too. Recent tests on a Michigan bridge, for example, shows no spalling . . . no pitting . . . practically no wear after two years of heavy traffic and approximately 200 freeze-thaw cycles!

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Dry Run Tunneling

London experiments with new subway methods

Two contractors are tunneling towards each other from opposite ends of a mile-long stretch in northeast London so that the London Transport Authority can catch up with new techniques of subway construction.

A $154-million subway line has been recommended for London, but the authority hasn't built a subway tunnel in more than 50 years. The experimental mile will give them a chance to find out which of two new methods is the cheapest and quickest.

London's existing subway tunnels are made up of cast-iron rings bolted together. The space between the rings and the surrounding clay, about 1.5 in., is grouted.

Edmund Nuttall Sons & Co. Ltd., of London, starting at the Tottenham end, will build a tunnel lined with cast-iron sections sufficiently flexible to expand during construction and fit tightly against the clay. No grouting will be needed. Small wedges will keep the sections in place.

Kinnear Moodie & Co. Ltd., working from the Finsbury Park area, will use concrete blocks arranged to form an expansible ring that will fit flush with the clay. Key pieces will hold them after expansion.

The $1.2-million test tunnel, which will be built 50 to 60 ft below the ground, could form part of the new subway line.

The new line, the Victoria Line, would run from central London to Walthamstow. It would take about six years to build.

American Firm to Design Radiation Lab for India

The government of India has awarded the contract for design of a $4 million high level radiation laboratory near Bombay to Vitro International, a division of Vitro Corporation of America, New York City.

The laboratory will have more than 100,000 sq ft of floor area and is reported to be one of the largest integrated radioactive research facilities in the world. It will be located at the Indian Atomic Energy Department nuclear center at Trombay, India.

The radioactive laboratory will include facilities for radiochemistry, radioisotope and hot metallurgy operations. A special feature of the laboratory will be a number of hot cell areas for radiation experiments with plutonium and other highly toxic materials.

Europe Builds Big Atom Smasher

The world's biggest atom smasher was dedicated last month in Meyrin, Switzerland. The world title will shortly go to the U.S., however, on completion of the synchronotron at Brookhaven National Laboratory in Long Island (ENR Mar. 13, 1958, p. 25).

Housed in an 850-ft-dia underground structure, the $30-million worth of electronic equipment will accelerate protons almost to the speed of light in one second. European scientists will use the giant proton synchronotron to learn more about the atomic nucleus.

Thirteen Western European nations pooled financial and scientific resources to produce the atom smasher.

World's Longest Concrete Arch

Contractors are at work on what will be the world's longest concrete arch bridge. Crossing the Paramatta River, an arm of Australia's Sydney Harbor, the bridge will have a total length of 2,000 ft and a central arch 1,000 ft long.

The $5.6-million structure will have a light, continuous prestressed concrete deck supported on slender prestressed concrete columns. The deck will have 19 spans, each 100 ft long.

Over the river, columns rest on the arch, which consists of four interconnected hollow box-section concrete ribs, each 20 ft wide. Precast ribs—12 ft deep at the crown and 24 ft at the springings—will be erected one at a time on steel falsework.

The arch will have a clear height above mean water level of 142 ft. Abutments will be of mass concrete cast into the sandstone river banks.

The deck will have a 72-ft roadway (six traffic lanes) and a 6-ft pedestrian path on each side.

The bridge was designed by G. Maunsell & Partners of London and Melbourne for the joint contractors, Reed & Mallik Ltd, of Salisbury, England, and Stuart Bros. Pty. Ltd., of Sydney. Contract was awarded by the Department of Main Roads, New South Wales.

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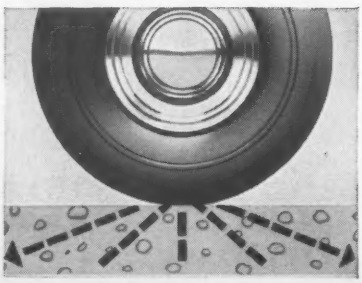
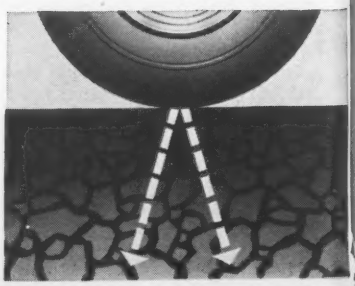


Concrete's beam effect spreads wheel weight over large area of subgrade, reduces spot pressures. Strength of material—not mass—carries the load, permitting minimum-thickness pavement.



Flexible pavement, by its very flexing effect, transmits load forces in almost direct line to subgrade. Excessive concentration of load force can be overcome only by building up pavement thickness.

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Modern concrete for Kentucky's Interstate 65 south of Elizabethtown

he pavement that is not flexible th with minimum thickness!

Interstate System highways like Kentucky's Route 65, pictured here, call for a pavement that is solid and unyielding.

Kentucky's highway department chose concrete for this important stretch of Interstate System highway. Necessity for multiple strata construction of 2 to 3 times greater total depth was avoided.

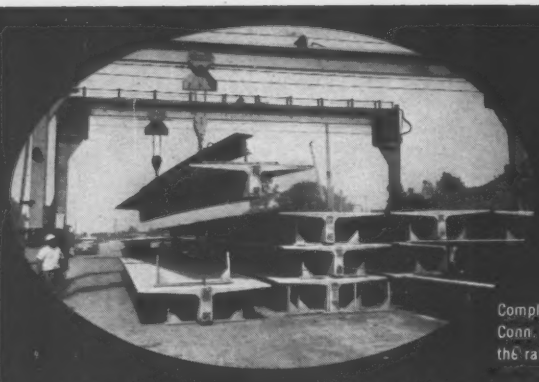
Strength with minimum bulk is possible, of course, because concrete isn't flexible. It supports and spreads the load like a beam. Pressures on the subgrade stay permanently within safe limits.

And concrete's design efficiency assures low maintenance costs in years ahead. In fact, maintenance costs will be as much as 60% lower than for asphalt. Only concrete enables engineers to design highways to last 50 years and more.

You can see why engineers and taxpayers agree that concrete is the preferred pavement for heavy-duty highways—especially on the new Interstate System.

PORTLAND CEMENT ASSOCIATION *A national organization to improve and extend the uses of concrete*

PRESTRESSED CONCRETE "T" BEAMS FOR UNIQUE PARKING DECK



Completed "T" beams at C. W. Blakeslee's Hamden, Conn. plant. They were shipped to the job site at the rate of 18 per day on trucks with special frames.

Placing beams at job site in Springfield, Mass. With each beam set at a slightly different angle, there is no more than a 4 percent grade in any part of the structure. Each beam is 8 ft. wide at the top of the "T" and only 8 in. wide at the stem.

• This new parking deck for the Forbes & Wallace department store is a striking example of the opportunities that prestressed concrete offers designers and builders.

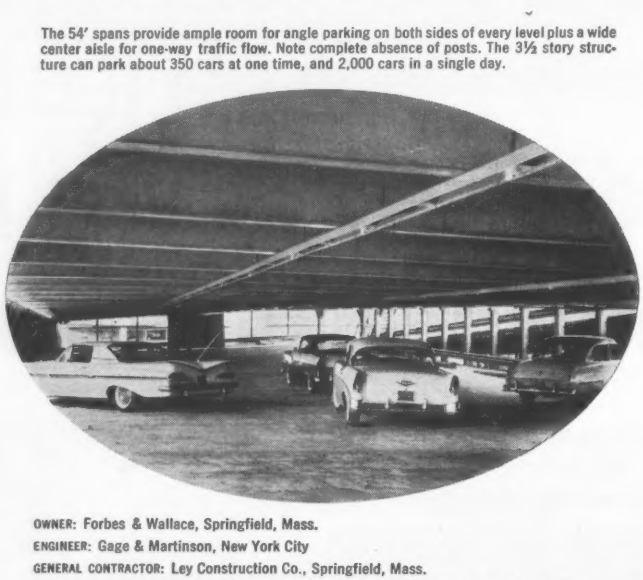
Gage and Martinson's unique design utilizes 182 ten-ton prestressed concrete "T" beams, whose 54′ lengths permit a completely post-free parking facility. Ease and speed of erecting the prefabricated concrete decks made it possible for the Ley Construction Company to open the 3½ story structure for business just seven months after breaking ground.

The manufacturer of these beams, C. W. Blakeslee & Sons, Inc. uses Lehigh Early Strength Cement for maximum production efficiency in their prestressing plant. Units are completed quickly, ready for trucking to the job site as needed.

This is typical of the advantages of Lehigh Early Strength Cement in modern concrete construction. Lehigh Portland Cement Company, Allentown, Pa.

LEHIGH CEMENTS

The 54′ spans provide ample room for angle parking on both sides of every level plus a wide center aisle for one-way traffic flow. Note complete absence of posts. The 3½ story structure can park about 350 cars at one time, and 2,000 cars in a single day.



OWNER: Forbes & Wallace, Springfield, Mass.
ENGINEER: Gage & Martinson, New York City
GENERAL CONTRACTOR: Ley Construction Co., Springfield, Mass.
MANUFACTURER OF PRESTRESSED BEAMS: C. W. Blakeslee & Sons, Inc., New Haven, Conn.
READY MIX CONCRETE FOR POURED-IN-PLACE CONCRETE: Valentine Concrete Co. Springfield, Mass.

Unusual Scaffold for Capitol

Repair work on the dome of the Capitol posed an unusual challenge to the contractor. Bits of plaster falling from the interior frescoes raised questions about the dome's structural capacity.

The problem: how to provide access to the outside surface for inspection, sandblasting, and painting without overloading the 100-year-old, 4,450-ton cast-iron dome.

The solution was a system of galvanized pipe and clamp scaffolding trusses cantilevered from each of four equidistant points around the dome. The scaffold trusses connect to the tholus (the cupola-like structure atop the dome), but for lateral support only; they get no vertical support from it.

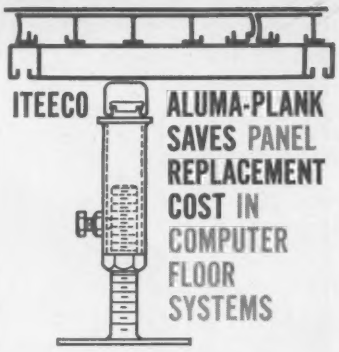
Cables, running from the tops of the scaffold towers to the spring line of the dome, balance the overturning forces of the cantilevered trusses. Pipe-and-clamp scaffolding encircles the dome at the spring line.

Another complicating factor was the necessity of starting scaffolding construction 120 ft from the dome base at one quadrant point. This was required to transport materials from the work yard, 40 ft below the terrace walkway. The scaffolding contractor had to build a 50-ft-deep tower spanning the terrace. Above the walkways, 10-ft clearance was required to allow continued pedestrian traffic. A tubular elevator and access ramps transported materials from the work yard and to the dome.

Temporary staging rings gave access to the dome areas between the four scaffolding towers. Mechanical hoists lifted tons of sand to the towers for blast cleaning. Air lines transmitted compressed air to the dome area from big compressors conveniently located on the ground. Smaller lines ran around the dome to specific work areas. Use of large supply lines reduced pressure loss considerably.

For the painting work, which followed blastcleaning, bosuns' chairs carried painters over the entire dome surface.

Universal Manufacturing Corp. of Zelienople, Pa., designed and erected the 20,000 pieces of scaffolding required for the job. J. F. Fitzgerald of Canton, Mass., was general contractor.



Save up to 6 ft. of flooring ordinarily lost when repaneling access openings. Use Aluma-Plank 9″ x 27″ sections.

ITEECO'S new, lightweight extruded aluminum flooring is the only modular plank system available.

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INDUSTRIAL TUBULAR EQUIPMENT CO.
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or other wet work—
for "quick dry"...specify...

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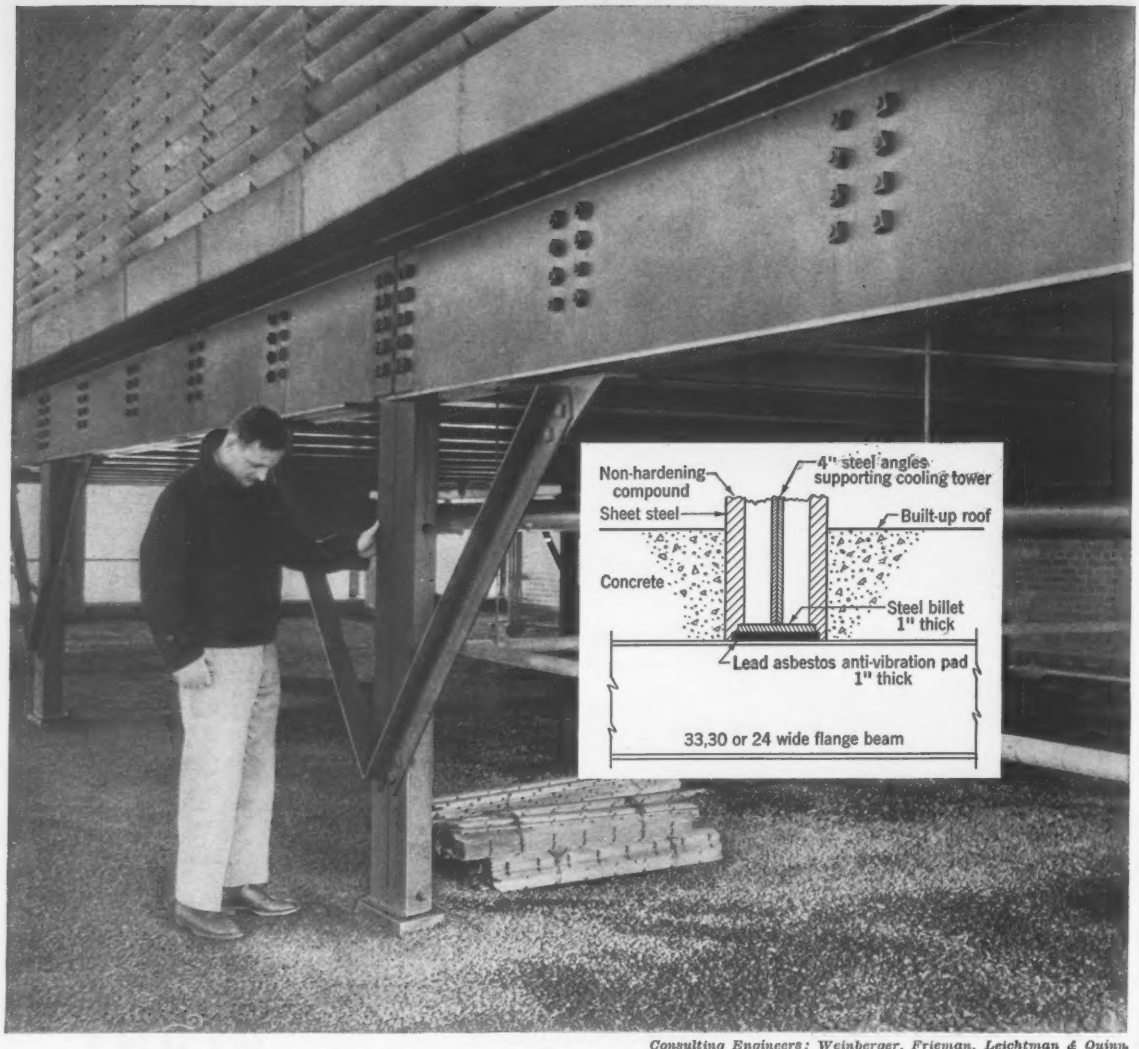


Consulting Engineers: Weinberger, Frieman, Leichtman & Quinn
Architects: Sylvan Bien & Robert L. Bien

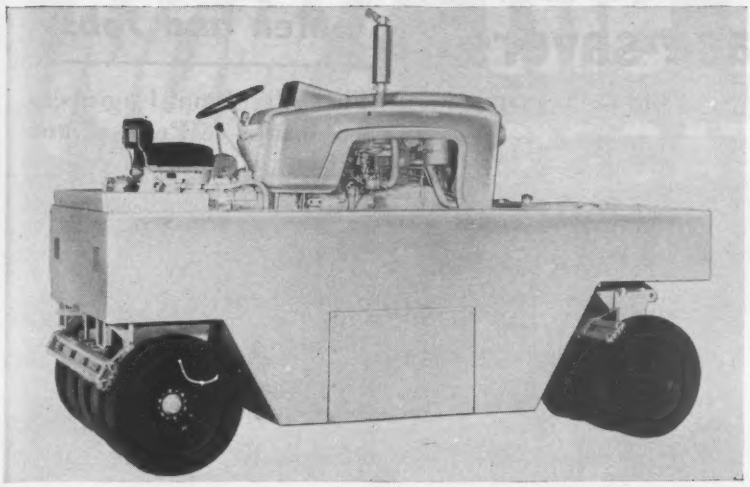
LEAD gives new skyscraper vibration-free cooling

Occupants of the new 35-story skyscraper at 575 Lexington Avenue in New York stay cool all summer, thanks to a 205,000 pound air-conditioning unit located on the roof. And, because of the lead asbestos pads beneath it, they stay comfortably cool . . . noise and vibration are isolated to the tower.

Moreover, this sound and vibration isolation was achieved in much shorter installation time than would have been required by other methods. The lead asbestos pads, as well as the steel columns supporting the tower, were placed in position while the steel work was in progress . . . in contrast to other methods which would have necessitated waiting until the concrete had been poured. This time saving, obviously, was reflected in a significant reduction in costs to the builder.

If *you* have a vibration or noise problem, it is safe to assume that the solution lies in one of the many forms of lead. We'd be more than pleased to assist you in finding it. For information, write to: Lead Industries Association, 60 East 42nd Street, New York 17, N. Y. 2354

LOOK AHEAD WITH LEAD



Nine-Wheel, Self-Propelled Roller

Now available is a nine-wheel pneumatic-tired, self-propelled roller. Western's Model 12-SP is powered by a 57-hp, four-cylinder gasoline engine with torque converter, reverse shuttle drive, five-speed transmission and hydraulic power steering.

The machine is equipped with oscillating front wheels, fully enclosed chain drive, 12-volt battery with starter and generator. Oscillating drive wheels, sprinkler bars and cocoa mats, front and rear lights are optional features.

With special ballasting, the unit can have a weight of 30,000 lb or a wheel load of 3,140 lb. Western Equipment Div., Douglas Motors Corp., Milwaukee, Wis.

Allis-Chalmers' Rotary Mowers

Four rotary mowers are available for use along highways and on airports, as well as in other applications.

One of these—Model 166—has a 5-ft 6-in. cut and is center-mounted for the Allis-Chalmers D-14 tractor. Cutting height from 2 to 11 in. is hydraulically controlled from the tractor seat.

Two mowers with 5-ft cuts are designated as Model 160. One is a trail type for use with any tractor or truck having PTO and standard ASAE drawbar. This model has two-position wheels—side or rear—and nine different wheel spacings. A hydraulic lift control adapter kit is optional.

The other is a rear-mounted unit for quick attachment to Allis-Chalmers D-17, D-14, WD-45 and WD tractors. Optional equipment includes a trail wheel with a puncture-proof tire for better height control over rough or rolling ground.

Model 172 has a 6-ft cut, is a trail type, and can be used with any vehicle having PTO and a standard ASAE drawbar. Allis-Chalmers Mfg. Co., Tractor Group, Milwaukee, Wis.

More Features Packed Into 15-Ton Crane

An improved self-propelled, rubber-tired crane, rated at 15 tons capacity, is designated Model 357. The machine converts into a ⅜-yd clam shell or dragline.

The unit is mounted on six pneumatic tires. One engine powers all functions and the machine is controlled and operated by one man.

Features of the carrier include two-pin adjustable double telescopic outriggers; hydraulic power steering; heavy-duty steel frame; rigid alloy steel turntable gear and roller path; easily adjusted twin hook rollers; and air brakes on all wheels.

In the upper works are an independent boom hoist; worm-drive power take-off assembly, straight-in-line engine mounting; one-piece cast gear case, smooth disc type clutches, and involute splined shafts. The machine incorporates split drum construction in which shafts and bearings remain in place.

Travel is accomplished through a two-speed, air-operated transmission. Unit Crane & Shovel Corp., Milwaukee, Wis.

Self-Propelled Trencher Is Operated by One Man

A one-man operated trencher—the Model MA-2 Trench Devil—weighs about 1,080 lb. and can be easily skid-loaded on a pick-up truck or small trailer. It may be moved for short distances under its own power, at 3 mph.

The machine has five digging widths—2¾, 3½, 4, 6 and 8 in., up to 54 in. in depth. Digging speed is variable from 0 to 1200 fph in either direction.

One side dirt delivery is accomplished by a reversible rubber-belted conveyor that can be changed from one side to the other within 60 sec. The Arps Corp., New Holstein, Wis.

Telescopic Screw Jacks Designed for Falsework

A telescopic screw jack has been produced to replace wood shoring and wedges as formwork supports for girder arches with horizontal, curved or sloping soffits.

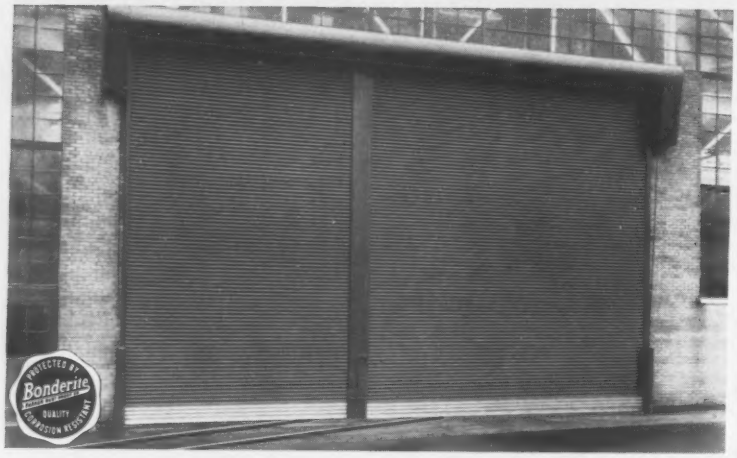
Wing nuts and brackets permit vertical adjustment and retracting round bars permit horizontal adjustment. This feature adapts the jack for use on girders with variable depth and width.

Jacks come in sizes up to 30 in. high and 16 to 26 in. T-beam width. All jacks are 1½ in. dia. Williams Form Engineering Corp., 1501 Madison Ave., S.E., Grand Rapids 7, Mich.

MAHON ROLLING DOORS...

versatile space-savers

THAT OUTLAST ALL OTHER TYPES



Versatility at Work—Mahon Doors as installed for Fitzsimons Mfg. Co., Detroit. Here, a Railroad and Truck Door are combined into a dual-purpose unit. How: a movable mullion . . . application-engineered by Mahon . . . permits easy access through either or both doors.

Door requirements differ . . . for commercial or industrial reasons, for in-plant railroad entry or truck-loading areas and from simple service doors to attractively functional institutional entrances. The range is wide. Yet, Mahon supplies Rolling Doors to suit your specific needs . . . standard or Underwriters' labeled . . . for new or old openings.

Mahon doors are rugged and precision assembled for easy operation—economically installed. Their fast, counterbalanced, vertical roll-up action saves expensive space and makes it completely usable. All-metal (either galvanized steel, stainless steel, aluminum or bronze) construction insure longer life, lower maintenance.

Whether you're building, modifying or replacing—investigate Mahon Rolling Doors . . . the doors and the advantages last.

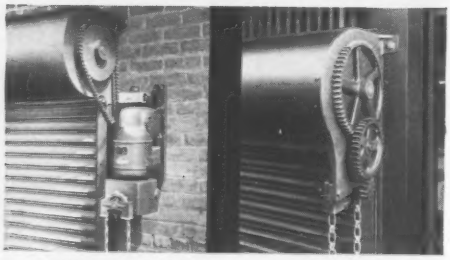
MAHON BUILDING PRODUCTS

- Aluminum or Steel Curtain Wall (in natural or colored metals)
- Rolling Steel Doors (Standard or Underwriters' labeled)
- Metalclad Fire Walls (Underwriters' rated)
- M-Floors (Steel Cellular Sub-Floors)
- Long Span M-Deck (Cellular or Open Beam)
- Steel Roof Deck
- Acoustical and Troffer Forms
- Acoustical Metal Walls, Partitions, and Roof Deck
- Permanent Concrete Floor Forms

CONSTRUCTION SERVICES

- Structural Steel—Fabrication and Erection
- Steel Fabrication—Weldments

MAHON MAKES ROLLING DOORS IN MANUAL, MECHANICAL OR POWER-OPERATED MODELS IN STANDARD OR UNDERWRITERS' LABELED TYPES



MAHON DOORS CAN BE POWER OPERATED . . .

CHAIN CRANK . . . OR MANUALLY OPERATED

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Representatives in all principal cities

MAHON

Men and Jobs

Three Regional Engineers Appointed in Pennsylvania

Pennsylvania Secretary of Highway Park H. Martin appointed three regional engineers to get closer supervision of construction and maintenance activities in the field.

Leonard J. Curran, who has been District 11 engineer, will be in charge of the western region of the state. Walter Fries, formerly assigned to the central office as plans engineer, will have charge of the central region. The eastern region will be the responsibility of Raymond F. Campbell, who had been special assistant to the secretary.

The three regional engineers will report directly to the deputy secretary for engineering, but in no way replace the present organizational set up in the 11 engineering districts. These appointments fulfill a recommendation made by the Automotive Safety Foundation, which surveyed the department.

Careers

Associations

H. Buckly Dietrich has been elected president of the American Institute of Steel Construction.

Walker L. Cisler, president of Detroit Edison, is the newly elected president of the American Society of Mechanical Engineers.

Jacob R. Sensibar, president of the Construction Aggregates Corp., Chicago, has been elected national president of the American Technion Society. He has been president of the midwest region.

Eugene M. Stone, president of the Empire Petroleum Co., Denver, has been elected chairman of the board of the Asphalt Institute.

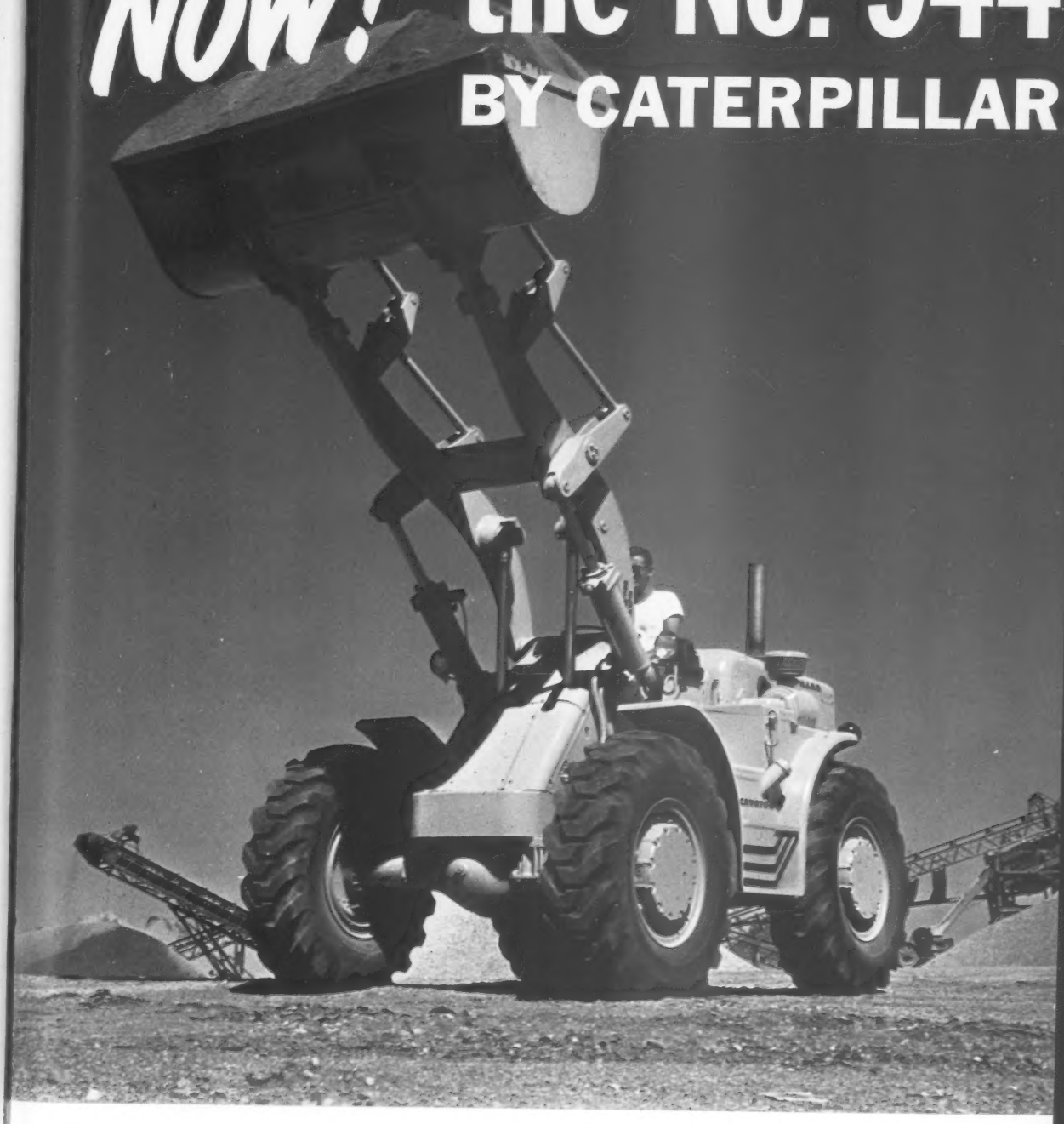
Ralph I. Beerbower has been appointed acting secretary of the Ohio Contractors Association. He has been assistant secretary in charge of the labor relations division since 1957. Before coming to the association Mr. Beerbower was with the Walter L. Folmer Construction Co., Hamilton, Ohio.

H. E. Fritzche, vice-president of the Carl A. Nelson Co., Burlington, Vt. is the new president of the Master Builders of Iowa, an affiliate of the Associated General Contractors.

E. D. Hoekstra has been appointed executive secretary of the National Constructors Association. Mr. Hoekstra, who has been in construction labor relations for fifteen years, has been an employer member of a national arbitration board.

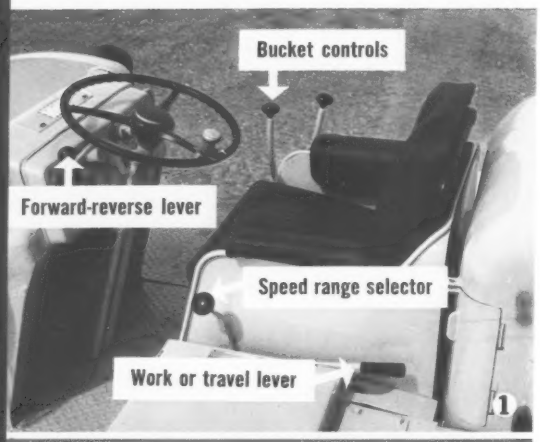
(*Men and Jobs continued p.* 61)

NOW! the No. 944
BY CATERPILLAR



THE *FIRST*
OF A NEW WHEEL LOADER LINE

the No. 944 ...designed for action,



IT'S HERE . . . the Cat No. 944 . . . rated at 2 cu. yd. capacity . . . the first of a completely new line of equipment that will soon include the No. 922 (1¼ cu. yd. bucket) and the No. 966 (2½ cu. yd. bucket).

Watch for these new machines with the bold new design . . . they're ready to bring new standards to wheel loader operation.

Take a look at the No. 944's big, new features . . . features that give it lively response and make it the easiest and safest wheel loader to operate. See it in action at your Caterpillar Dealer. Ask him for a demonstration. See for yourself how the *new design* pays off on your loader jobs.

DESIGNED FOR ACTION . . . with plenty of power for both machine drive *and* bucket hydraulics. Choose from two great, new engines . . . the compact 4-cylinder diesel, turbocharged for maximum efficiency . . . or the 6-cylinder gasoline engine. Both are 105 HP units, fully equipped. Both are made to the same rigid standards. Whatever the requirements of your operation, there's a No. 944 powered to meet your needs.

Tailored to this power is the torque converter and power shift transmission, providing smooth, instant, finger-tip shifting. A full range of work and travel speeds is available on the No. 944. And reverse speeds are 25% faster than forward speeds . . . important in reducing cycle times. Travel Range gives 2-wheel drive for roading . . . Work Range automatically puts power to all 4 wheels.

Machine and bucket controls are located for easy handling**(1)**—the forward-reverse lever is mounted on the steering column.

Both bucket control levers have kick-out devices. The lift control releases at dumping height—the tilt control positions the bucket for digging. And for full bucket loads every pass the 2 cu. yd. bucket tilts back 41° at ground level. The high lift and *extra-long reach* make truck loading faster, easier.

There's plenty of action designed into the No. 944, ready to speed up your loader jobs.

DESIGNED FOR SAFETY . . . in the bold new lines**(2)**. Bucket lift arms and pivot points are completely in front of the operator's area. This gives the operator new freedom of movement . . . greater all-around visibility.

Wide steps**(3)** make it safe and easy to get on or off . . . from either side. No need to climb over tires. Fenders provide a handy platform for checking the engine and they protect the operator from rocks and mud**(4)**.

The No. 944 brake system gives safer, more precise control**(5)**. The *left* brake neutralizes the transmission *as* it stops the machine. This gives superior loading action in extra-tough material.

Traxcavator safety, economy

The *right* brake leaves the transmission engaged . . . for full control when creeping, working on steep slopes or roading downhill.

These and other safety-bonus features give the No. 944 operator greater confidence, greater efficiency.

DESIGNED FOR ECONOMY . . . in the Caterpillar tradition. Sound engineering, modern design, service accessibility, quality construction, responsible parts and service coverage all add up to a new kind of stability—mechanical stability—in the No. 944. The many cost-saving features of this NEW wheel loader will pay off big in your operation!

Offered in a full line of versatile attachments and accessories are forks, cab(**6**) and special buckets, including the *exclusive side dump* that gives the No. 944 added efficiency.

BRIEF SPECIFICATIONS

Horsepower (Net)	105*
Bucket capacity	2 cu. yd.
Bucket reach (@ 7 ft. dump height)	50¾ in.
Over-all width (bucket)	93½ in.
Wheel base	88 in.
Speeds, forward (4)	0-24 MPH
reverse (4)	0-30 MPH
Weight, shipping (with diesel engine)	20,780 lb.
(with gasoline engine)	20,440 lb.

*For comparative purposes, the maximum rating of the D330 Engine used in the No. 944 is 135 horsepower.

THE No. 944 TRAXCAVATOR...

NEW IN DESIGN AND LOADED WITH PERFORMANCE

Learn more about it. Visit your Caterpillar Dealer the week of March 14

There's a wealth of LOADER KNOW-HOW behind the No. 944. It comes from the builders of the best accepted track-type tractor-shovels in the field.

Every feature is designed for *efficient work*. Plenty of horsepower . . . finger-tip shifting . . . smooth, fast bucket action . . . outstanding operator comfort and safety. The result is the bold, new No. 944 . . . the *outstanding* performer in its class!

For complete facts, see your Caterpillar Dealer now.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

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DIESEL ENGINES · TRACTORS · MOTOR GRADERS
EARTHMOVING EQUIPMENT

A GREAT NEW PRODUCT IN THE CATERPILLAR TRADITION

. . . Men and Jobs

R. Walker Martin, president of Walker Martin, Inc., Raleigh, has been re-elected president of the North Carolina Engineering Foundation. The foundation supports a wide range of teaching research and extension functions at the State college's school of engineering.

Earl L. Cump has been elected president of the Pennsylvania Builders Chapter of the Associated General Contracts.

Allan K. Own is the new president of the Carolina's Ready Mixed Concrete Association.

John K. Edmonds has been named assistant executive vice president of the American Institute of Steel Construction. Since 1946 he has been a partner in the firm of John K. Edmonds & Associates, a management consulting firm in Columbia. Before forming his own company he was with Jones and Laughlin Steel Corp. for five years.

Warren H. Johnson has been appointed to the San Francisco staff of the Portland Cement Association as a paving and general field engineer. Since 1956 he has been in the Soil-Cement Bureau at the Association's general office in Chicago.

Raymond E. Bert has been elected president of the North Carolina Section of the American Water Works Association and the North Carolina Sewage and Industrial Waste Association.

Wellington Rupp, a Seattle consulting engineer and lawyer, is president of the Seattle chapter of the American Society of Civil Engineers.

Newly elected presidents for the state groups of the Associated General Contractors are **Frank N. Rothwell** of Hawaii, **J. V. River, Jr.** of Alabama, **Richard M. Appleby Sr.** of Delaware and **Paul E. Elsner** of California.

Heading the Structural Engineers Association of Northern California is **Lewlie W. Graham.**

Joseph Knot Jr. of Standard Oil Co. has been elected president of the Indiana section of the American Society of Civil Engineers.

F. M. Lea, director of the British Building Research Station at Garston, U. K., takes over as president of the International Council for Building Research, Studies and Documentation.

Mario C. Celli is the new president of the Pennsylvania Society of Architects.

The Prestressed Concrete Manufacturers Association of Texas has just been formed. **Robert Carr,** president of the Texas Concrete Co., Victoria, Tex., is president.

STOW MOTOR-IN-HEAD VIBRATOR . . . saves time, cuts costs

easily carried, operated by one man

A Complete Line of Concrete Construction Equipment.

Vibrating Screeds

Grinders

Roto-Trowels

Vibrators

BINGHAMTON, N. Y. The versatile, lightweight, 60 cycle motor-in-head vibrator introduced last year by Stow Manufacturing Co. has proved to be one of the most popular in the line. Contractors like the way the STOW YU vibrates even the stiffest mixes; and they appreciate the way it saves money, down-time and labor costs . . . thanks to its one-man operation and its freedom from maintenance or fuel problems.

The heart of this vibrator is its Universal motor, completely sealed in the head which delivers 12,000 to 15,000 VPM. This high-frequency, low amplitude vibration penetrates farther, reduces voids with much less wear and tear on the forms. To change the head, simply snap it off, snap on a replacement.

Sturdy 4-ply neoprene encases the electric wires and serves as a handle. It is stiff enough to control the vibrating head, flexible enough to coil easily for carrying and storage.

The completely enclosed, water-tight on-off switch is conveniently located 7 feet from the head; a 25' electric cable plugs into any AC or DC outlet. The STOW YU is equipped with a thermostatic switch which shuts off the motor automatically in case of overheating or overload, re-starts it when safe.

Standard equipment on the STOW YU vibrator consists of a 2⅝" vibrator head with a built-in Universal motor, rugged 4-ply neoprene casing, waterproof on-off switch, and a 25' electric cable. Casing is available in 7', 14', and 21' lengths for vibrators that weigh 25 lbs., 33 lbs., and 41 lbs. respectively.

For more information on this equipment write for Stow Catalog 580 which gives complete data on STOW Vibrating Screeds, Vibrators, Roto-Trowels and Concrete Grinders.

STOW

Manufacturing Co.
19 Shear Street
Binghamton, New York

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Stow Manufacturing Co. Dept. C3 19 Shear Street
Binghamton, New York

Please send me Stow Catalog 580 and name of nearest distributor.

Name_____ Title_____

Company_____

Street_____

City_____ State_____

The rugged Caterpillar crawler Tractor above is depended upon throughout the world to keep the big jobs moving. A single bearing failure can cause costly delays, perhaps endanger job completion in contract time. That's why Caterpillar and other well-known makers depend in many instances on Rollway bearings in vital spots! Rollway Bearing Company, Inc., Syracuse, N. Y., manufacturers of a complete line of radial thrust cylindrical roller bearings. Write for a complete product line catalog.

ENGINEERING OFFICES:
Syracuse • Boston • Chicago • Detroit • Toronto • Pittsburgh • Cleveland • Seattle • Houston • Philadelphia • LosAngeles • SanFrancisco

Various alternates priced for . . .

Water Works Plant Improvements

It will cost Spartanburg, S. C., $421,604 (12% under the engineers estimate) for two contracts to increase capacity of the R. B. Simms Filtration Plant. Included are a sedimentation basin, a 1.5-mil-gal clear water well, rehabilitation of seven filters, pipe work, and setting up of a 10-mgd city-supplied pump. Wiedman & Singleton, Atlanta, is the consultant.

A $361,004 award to Lee Construction Co., Charlotte, N. C., is for two divisions of the work, and breaks down like this:

Div. 1. Structural work & outside piping	$208,936
2. Mechanical work and equipment, and installation of city-supplied pump	158,368
Total, both divisions	$365,304
Less discount for award on combination of both divisions	4,300
Total award, Div. 1 & 2	$361,004

Bidders were required to price alternate B.I.F. and Pratt cylinder operated butterfly valves, and B.I.F. and Simplex instrumentation and control equipment. The award was on the B.I.F. equipment.

The contract on the 1.5 mil gal clear water well went to Crom Corp., Gainesville, Fla., on a lump sum bid of $60,600 for an alternate wire stressed tank with steel inner shell and wall thickness called for in the plans. This was $9,300 (13.3%) under Crom's figure on the basic design—a clear water well with prestressed rod walls and roof. It was $3,900 (6.9%) over Crom's bid on a second alternate—their standard design using wire stressed tank with wall thickness of 5½ in. No other alternates were priced.

The low bid of $60,200 on the basic design called for in the plans, came in from Cecil's Inc., Spartanburg, and the high bid of $74,160 from Pressure Cone Co., Florence, Ala.

The contractor furnishes all materials except the pump. Rail and truck transportation is available. The railroad is 13 miles from the site.

Prevailing wages include: carpenter, $1.85; crane & power shovel operator, $2.00; concrete worker, $1.10; tractor operator, $2.00; common laborer, $1.00.

The bids on the structural work, piping, and mechanical work, included:

Div. 1—Structural Work, etc.

1C Lee Constr. Co., Charlotte, N. C.	$361,004
2 G. E. Moore, Greenwood, S. C.	393,588
7 Cecil's Inc., Spartanburg, S. C.	497,860

Bids: 11-17-59 Items	Unit	Quantity	Unit Prices 1C	2
Struct work & outs piping	ls	job	$196,236	$214,480
Exc, rock, in trenches	cy	100	20.00	15.00
structural	cy	2,900	3.00	3.75
Adjustment unit prices				
Exc, earth	cy		3.00	2.00
Concrete, cl A, footings	cy		17.00	32.00
walls	cy		20.00	40.00
floors	cy		20.00	37.50
cl B mass	cy		17.00	30.00
form work, footings	cy		1.50	5.00
wall	cy		25.00	12.00
cl B mass conc	cy		1.50	5.00
Reinf steel	lb		0.15	0.16
Div. 2—Mechanical				
General mechanical work	ls	job	36,693	36,195
Major mechanical equipment: valves, cone check, Chapman	ls	job	6,456	nb
Allis Chalmers	ls	job	.....	7,800
butterfly, cyl operated, hyd lt duty, 1-6"; lt duty filters, 7-8", 6-10", 1-14", 6-12", 12-16", 5-20" pneumatic, B. I. F.	ls	job	26,559	33,230
Pratt	ls	job	27,178	22,164
butterfly, manually oper, light duty, 1-42", 1-24", 1-12", 1-36", 3-16"; heavy duty, 2-20", 2-24", 2-36", B. I. F.	ls	job	35,044	nb
Pratt	ls	job	nb	36,618
instru & control, B. I. F.	ls	job	41,583	51,890
Simplex	ls	job	42,017	48,116
clarifier for basin, Dorr Oliver	ls	job	12,033	15,840

Completion schedule: 300 calendar days

Chicago Sewer in Tunnel To Cost $718,427

To drain the South Route Expressway and grade separations, the Cook County Highway Department, Chicago, will spend $718,427 for 4,641 lin ft of 7 ft 9 in. x 8 ft 7 in. semi-elliptical reinforced concrete storm sewer, constructed in a tunnel. The award to S. A. Healy Co., Chicago, the low bidder of eleven, was 7% under the $774,755 second low bid.

Contract includes eight laterals at an average depth of 40 ft. Average depth to sewer pipe inner base is 47⅓ ft. Manhole depth from top of sewer to top of frame and grate is 35 ft.

Due to proximity of the work to Lake Calument, the contractor may encounter poor soil conditions, making pumping necessary.

Minimum wages range from a high of $3.70 for skilled, through $3.45 for semi-skilled, to $3.10 for common laborers.

Unit prices bid on the work include:

1C S. A. Healy Co., Chicago	$718,427
2 John Doherty Co., Chicago	774,755
11 Santucci Constr. Co., Skokie, Ill	1,110,194

Bids: 10-6-59 Items	Unit	Quantity	Unit Prices 1C	2
RC sewer, semi elliptical	lf	4,641	$147.00	$155.00
Manhole, tp B, 7' 9" x 8' 7"	ea	8	2,400	6,000
Lateral sewer connections	ea	8	2,000	800.00
Excavation, rock	cy	100	10.00	10.00

Completion schedule: 185 cal days

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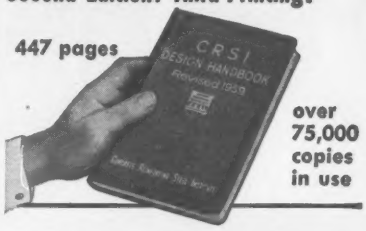

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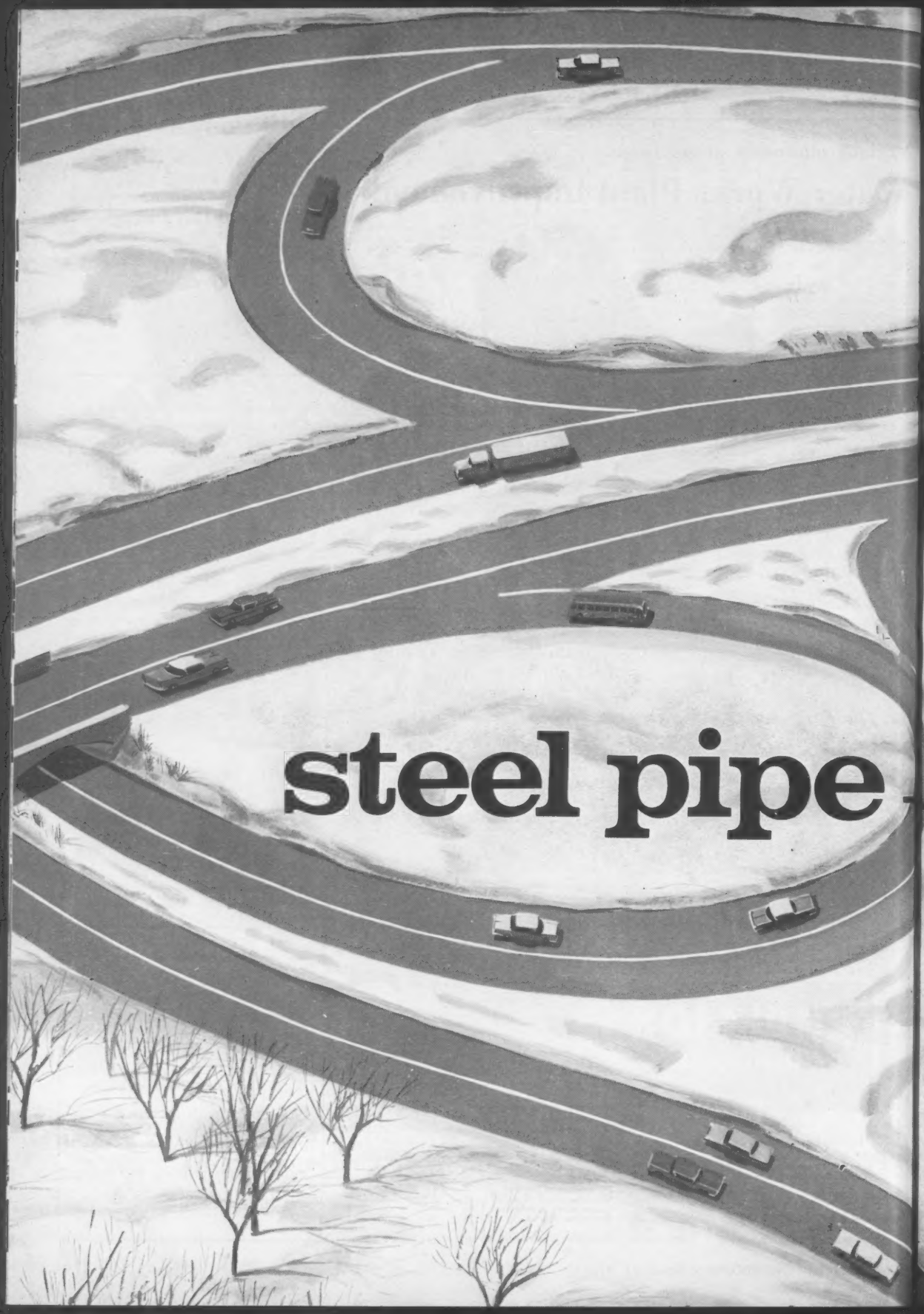
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the underlying element of safety

Where the traffic's heaviest, there's where the most accidents occur. Naturally. But not inevitably, as our new thruways are proving. Highway safety experts are eliminating road hazards, and are achieving some mighty fine results—as evidenced by lower accident ratios on the heavily-travelled arteries.

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#6

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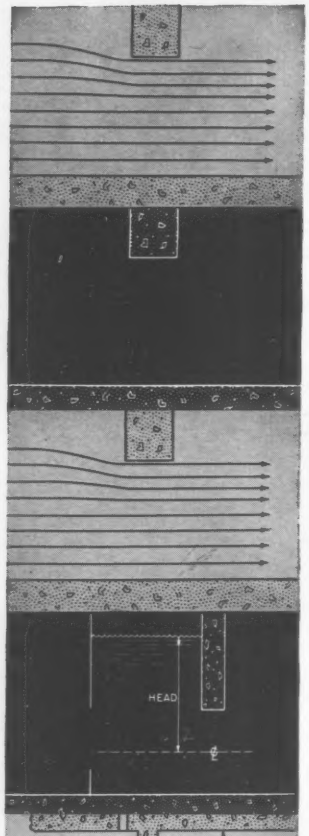


Because of the improved flow characteristics of the Rodney Hunt HY-Q sluice gate, a given volume of flow can be handled with a smaller gate size, narrower channel and lower channel walls than are required for a conventional gate. Thus there are often substantial economies effected in concrete construction. This improved flow is the direct result of the 5 other design advantages of the Rodney Hunt HY-Q sluice gate:

#1 HY-Q Sluice Gates Assure Maximum Flow

#2 HY-Q Sluice Gates Assure Complete Drainage

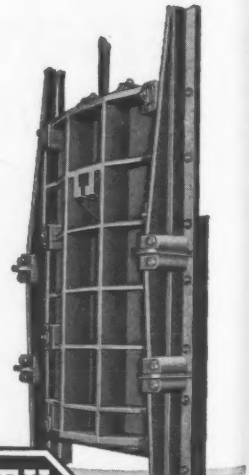
#3 HY-Q Sluice Gates Eliminate Interference with Flow

#4 HY-Q Sluice Gates Assure Maximum Hydraulic Gradient

#5 HY-Q Sluice Gates Permit Lowest Possible Invert

All these advantages derive from the design of the resilient seal fastened to the bottom of the disc. The seal extends the full width of the disc and provides a cushioned closing at the stop bar flush with the invert.

The HY-Q gate offers unmatched design flexibility and construction economy for water control projects . . . with hundreds of gate sizes available from 6" x 6" to 144" x 144" and larger to meet your specific design requirements.



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a product of
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Water Control Equipment Division
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Serving water control engineers with equipment and engineering

RODNEY HUNT

Materials Prices

Monthly Market Quotations by ENR Field Reporters

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS* billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$5.50	$5.30	$5.675	$12.25	.....	$110.50	$130.00	$6.975	$9.75	$6.00	.....
Chicago Area	5.50	5.30	5.675	12.25	$6.50	110.50	130.00	6.975	9.75	6.00	.....
Pittsburgh Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.00	$14.75
Buffalo Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.00	14.75
Cleveland	.....	.....	5.675	12.25	6.50	.....	.....	.....	.....	.....	14.75
Youngstown Area	.....	.....	5.675	.....	.....	.....	.....	.....	9.75	.....	.....
Geneva	5.50	5.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	6.20	.....	6.375	.....	6.50	.....	.....	.....	9.75	6.875	.....
Pueblo	.....	.....	.....	.....	.....	.....	.....	6.975	9.75	6.00	.....

* Fairless Works, $5.575.

IRON AND STEEL PRODUCTS—F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	STRUCTURAL SHAPES Extras, New York: W	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Rail steel	REINFORCING BARS Extras, New York:	EXPANDED METAL LATH Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	EXPANDED METAL LATH Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq ft., carload lots fob mill
Atlanta	$9.40		8.75	$8.75		$53.00S	$57.00S	
Baltimore	9.70		9.00T	....		44.50	49.00	
Birmingham	9.00ty		8.50-9.00tyV	8.00ty		61.00pK	67.00pK	
Boston	9.12K		8.75t	8.75t		49.50K	54.00K	
Chicago	9.15s		7.16gu	7.16gu		52.00tU	65.00tU	
Cincinnati	9.55ktt		9.04t	....		44.50Kg	49.00mnKg	
Cleveland	8.20st		7.14ct	....		46.50KL	51.00KL	
Dallas	10.45M		9.00	9.00		44.00u	48.50w	
Denver	10.15cK		9.25c	....		63.00n	69.00n	
Detroit	9.25RM		7.37Q	11.85Q		55.00O	63.00O	
Kansas City	9.82sT		8.10N	....		49.00	60.00	
Los Angeles	8.90dtt		7.35frt	....		55.00S	64.00S	
Minneapolis	....		9.20T	9.20T		44.50K	49.00K	
Montreal	7.90-8.60iCF/8.20-8.90AiF		7.00/7.50FGi	7.00/7.50FGi		65.70h	70.20h	
New Orleans	....		8.00gktz	....		48.50K	53.50K	
New York	8.12-9.24‡sV		8.60tv	8.60y		52.00n	59.00no	
Philadelphia	9.10buy		8.23uy	8.23y		44.50tU	55.20tU	
Pittsburgh	9.00y		7.35y	....		58.50‡rw	64.50‡rw	
St. Louis	9.12stz		7.75‡tsQ	7.75‡tsQ		61.00wxK	62.00wxK	
San Francisco	10.80aS		9.85jS	....		53.00S	58.00S	
Seattle	10.20aD		8.85DM	....		67.00‡nD	73.50‡nD	
Toronto	9.20H		7.85	7.85		44.00qqI	38.40qJ	

Quantity extras per cwt: Item: 10,000# and over, base. 5,000—9,999#, +10¢; 2,000—4,999#, +35¢; 1,000—1,999#, +85¢; 400—999#, +$1.75; 100—399#, +$3.00; under 100#, +$4.00. Order: 20,000# and over, base. 10,000—19,999#, +10¢; 5,000—9,999#, +20¢; 2,000—4,999#, +35¢; 1,000—1,999#, +$1.00; 400—999#, +$2; under 400, +$3.

EXTRAS, per cwt—♦Quantity (applies to LCL shipments only): under 1,000#, +$1.80; 1000-1999#, +$1.20; 2000-4999#, +$1.00; 5000-9999#, +90¢; 10,000-19,999#, +60¢; 20,000-29,999#, +30¢; 30,000-39,999#, +10¢; 40,000# & up, nnn. ♦Size†: #3 & #4, +$2.50; #5 & #6, +$1.40; #7 & #8, +$1.00; #9, #10, #11 +50¢. ♦Bending: heavy, +60¢; light +$2.20 (except in New York City and surrounding metropolitan area where bending must be done on the job). ♦Engineering (details and placing from designs by others): over 500 tons, +45¢; 200-499 tons, +50¢ but not over $4500; 75-199 tons, +65¢ but not over $2000; 20-74 tons, +75¢ but not over $975; 5-19 tons, +85¢ but not over $300; under 5 tons, +$1.00 but not over $85. Min. charge $35. Design only: +60¢.

WELDED FABRIC REINFORCING: 4 × 16 in., No. 5 & 10 wires — Joliet, Ill., Donora, Pa., Monessen, Pa. ..... $7.04; 4 × 12 in., No. 8 & 12 wires — Joliet, Ill., Donora, Pa., Monessen, Pa. ..... $9.62; 8 × 8 in., No. 6 & 6 wires — Joliet, Ill., Donora, Pa., Monessen, Pa. $4.17

*‡ Delivered **Aver. of Canadian & American *♦ add 4% sales tax *a 2000–4999# *b 10,000–19,999#, fob city *c 20 tons or over *d 10,000–29,999# *e Intermediate struct'l *f Incl. delivery in free zone *g CL *h list price; dominion tax exempt; add provincial and municipal taxes *i add provincial and municipal sales taxes *j intermediate and hard grade *k fob city *l delivered; contractor to do unloading *m copper alloy *n LCL *o asphalt coated *p 500 sq. yd. or more. *q 2.5 lb *r less 2% disc. for cash *s 10,000# item in 20,000# order *t less ½% disc. 10 days *u add 10¢ switch *v incl 15¢ del. *w truck lots. *x add 2% sales tax *y add 15¢ del. *z add 10¢ del. *A American made. *C Canadian made. *D ½% for cash. *E 30,000# or over. *F Federal tax exempt for bldgs. *G add 10¢ del. *H 8.85 without tariff charges. *I 3 lb $60.00. *J 4 lb $47.50. *K less 2% disc. 10 days *L F.o.b. Youngstown plant *M 5,000–9,999# *N 2,000–19,999# *O 100 sy lots *Q 5 tons to CL *R; revised *S less 2% disc. 10th *T less ½% disc. 10th of mo. *U less 2% disc 10 days *V varies according to type and size *W eff. Feb. 29

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE PRICE INDEXa	ASBESTOS CEMENT PIPE Z per lin. ft. 6' Press Cl. 150	ASBESTOS CEMENT PIPE Z per lin. ft. 12' Sew Cl. 1500	CLAY SEWER PIPE Per ft., delivered, car load ASTMC 13-55 8 in.	CLAY SEWER PIPE Per ft., delivered, car load ASTMC 13-55 12 in.	CLAY SEWER PIPE Per ft., delivered, car load ASTMC 200-56T 24 in.	CLAY SEWER PIPE Per ft., delivered, car load ASTMC 200-56T 36 in.	CLAY DRAIN TILE† Per 1,000 ft., car load lots, f.o.b. ASTMC 4-55 6 in.	CLAY DRAIN TILE† Per 1,000 ft., car load lots, f.o.b. ASTMC 4-55 8 in.	CONCRETE SEWER PIPEb Per ft., delivered ASTMC 14-55 12 in.	CONCRETE SEWER PIPEb Per ft., delivered ASTMC 14-55 24 in.
Atlanta	130.5	$1.61/1.69	$2.36/2.48	$0.55r	$1.00r	$4.50r	$12.50r	$209.00rr	$334.00r	$0.95mKr	$3.75mKr
Baltimore	140.1	1.61/1.69	2.19/2.30	.665	1.20	3.05	12.71	187.80	289.20	1.01	2.75
Birmingham	125.8	1.61/1.69	2.26/2.37	.50r	.95r	4.14rw	13.50rw	295.00rz	430.00rz	1.25rS	2.75rS
Boston	143.1	1.63/1.71	2.19/2.30	.784qrtL	1.512qrtL	6.255qrtM	.....	215.40r	330.60r	1.56S	3.47S
Chicago	139.8	1.61/1.69	2.19/2.30	.93rm	1.78rm	7.52rm	21.16rm	220.00Br	330.00Br	1.30	4.00
Cincinnati	135.5	1.63/1.71	2.19/2.30	.616ri	1.188rt	4.725rt	12.40r	270.00r	400.00r	.85rAB	3.25rAB
Cleveland	141.7	1.63/1.71	2.19/2.30	.69BCN	1.32tBC	5.13tBC	13.33tBC	155.40mBC	240.60mBC	1.35	3.60P
Dallas	137.8	1.63/1.71	2.26/2.37	.550‡B	.961B	4.40‡B	9.75‡bB	.....	.....	1.25BD	2.85BD
Denver	144.9	1.71/1.80	2.36/2.48	.56nr	1.00nr	4.98r	.....	460.00nr	640.00nr	1.05m	3.50m
Detroit	142.1	1.61/1.71	2.19/2.30	.97nk	1.86nk	7.48nk	19.95nk	212.00mk	327.00mk	1.40k	5.23k
Kansas City	138.5	1.61/1.71	2.26/2.37	.62r	1.125r	6.324br	16.86r	315.00r	625.00r	1.60r	3.55r
Los Angeles	148.6	1.70/1.79	2.19/2.30	.525l	1.795lS	7.195S	16.90lS	410.00lS	590.00lS	1.24reE	3.60freE
Minneapolis	144.8	1.67/1.75	2.26/2.37	.96oB	1.73oB	7.50oB	.....	.....	.....	2.19DFH	6.31DFH
Montreal	.....	.....	.....	1.13u	2.00u	7.00u	13.50u	288.00	545.00	1.17D	3.11jpD
New Orleans	132.3	1.61/1.69	2.26/2.37	.566r	1.078r	5.65r	.....	240.50pr	490.00	1.41ilR	3.76il
New York	138.5	1.63/1.71	2.19/2.30	.85	1.63R	10.73	28.80	240.81	369.84	1.50‡B	3.60‡B
Philadelphia	137.8	1.61/1.69	2.19/2.30	.72‡	1.40‡	9.02‡v	24.68‡v	220.00‡	330.00‡	1.50‡A	4.00‡A
Pittsburgh	142.9	1.63/1.71	2.19/2.30	.94K	2.01K	8.79K	24.15K	190.00	295.00	1.66DE	3.93DB
St. Louis	136.9	1.61/1.69	2.26/2.37	.65r	1.27r	5.10r	12.95rS	200.00r	350.00r	1.75i	4.05
San Francisco	148.6	1.70/1.79	2.19/2.30	.86‡d	1.86‡d	7.53‡d	18.00‡d	360.00‡l	620.00‡l	1.05‡Q	3.30‡Q
Seattle	149.0	1.71/1.80	2.19/2.30	.888k	1.86kb	7.61k	.....	254.00ck	.....	1.95ky	4.55ky
Toronto	.....	.....	.....	.80F	1.50F	6.00F	.....	185.00F	305.00F	1.05F	5.19F

*WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote

Mill	3½ to 6 in. Lap Weld* Black %	3½ to 6 in. Lap Weld* Galv. %	2½ & 3 in. Butt Weld* Black %	2½ & 3 in. Butt Weld* Galv. %	2 in. Black %	2 in. Galv. %
Lorain, Ohio	+2.00‡	+19.75‡	+3.50	+2.50	+13.75	+19.75
Aliquippa, Pa	3.25s	+14.50s	+3.50	+2.50	+13.75	+14.50
Sparrows Pt., Md.	.....	.....	+3.50	+1.00	+17.25	.....
Beaver, W. Va.	.....	.....	+3.50	+2.50	+13.75	+19.75
Youngstown, O.	.....	.....	+3.50	+2.50	+13.75	+14.50
Indiana Harbor, Ind.	.....	.....	+4.50	+2.50	+12.75	+19.75
Sharon, Pa.	2.25ab	+14.50a	+3.50	+2.50	+13.75	+19.75
Wheatland, Pa.	3.25ab	+15.50a	+3.50	+2.50	+13.75	+14.50
Etna, Pa.	3.25ab	+14.50a	+3.50	+2.50	+13.75	+19.75
Fontana, Calif.	.....	.....	+3.50	+2.50	+13.75	+19.75
	.....	.....	+9.75ab	+15.50b	0.75	+20.50ab

*Threaded and coupled. a 3½ to 4 in. weld. d 6 in. c: to 1 5 and 6 in. ♯ 5 in. b Continuous ♯ Seamless

*‡ Extra quality. *‡ delivered. *♦ add 4% sales tax *a PRICE INDEXES for CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 125.8; Burlington, N. J., 134.6. For explanation of index see ENR Sept. 29, 1955 page 139. *b Extra strength. *c 4-in., $130. *d SS361-A. *f 21 in. *g culvert pipe; reinf., ASTM C 75-56. *h reinf., ASTM C 76-54. *i reinf., ASTM C 76-55. *j centrispun. *k less 2% disc. for cash. *l fob plant. *m truck del. *n LCL del., fob truck. *p less 8% disc. 10th. *p freight allowed to destination in city. *u 35,000# minimum. *v less 2% disc. 10 days. *s 1 ft lengths. *u CSA A 60. *v standard strength. *w SS; add 20% for d.s. *x fob city. *y Reinforced. *z Upper value in range based on both truck lots and less than truck lots, fob city; lower value truck lots delivered. *A single strength. *B truckload. *C less 2% disc. 15th. *D ASTM 76-57. *E less 1% disc. 10 days. *F less 2% disc. 30 days. *G LCL. *H CL. *I fob origin, freight allowed. *J reinf. B14-15. *K Less 2% disc. 15 days. *L ASTM 13-57. *M ASTM 200-57. *N 2 ft lengths. Trucklots. *O add 2% Sales Tax. *P 18 in. *Q less 1% disc. 10th. *S ASTM 72, 12" 1.55, 24" 4.00.

* WROUGHT STEEL PIPE: Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft.(based on approx. $200 per net ton): Butt Weld ⅛ in., 8½¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 78½¢. Lap Weld 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. continuous weld same as lap weld prices Add freight, 3% transport tax for destination price. † Production discontinued November 1957

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill prices: Butt Weld—1 in. black, + 65.54, galv., + 95.77; 1½ in. black, + 65.54, galv. + 95.23, 1½ in. black, + 61.70 galv. + 91.2¢; Lap Weld —2½ in. to 3 in. black + 67.95 galv. + 95.77; 4½ in. to 6 in. black + 64.74 galv. + 90.68 Add freight rates plus 3% transportation tax to get destination price.

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Feb. 18; Next, Mar. 24
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Feb. 25; Next, Mar. 31
- Wage Rates, Building Board, Lath, Insulation: Last, Mar. 3; Next, Mar. 31
- Cement, Aggregate, Ready Mixed Concrete, Asphalt: Last, Mar. 10; Next, Apr. 7

This 146′ Republic Sectional Plate Pipe-Arch was . . .

ASSEMBLED IN FOUR DAYS!
INSTALLED IN 2½ HOURS!

A six-man crew completely assembled this 146′ sectional plate pipe-arch in four days. Installation required just 2½ hours. Results: big savings in time and money, earlier project completion, minimum construction traffic tie-ups.

This job report from Fond du Lac, Wisconsin, is typical of Republic Sectional Plate Pipe-Arch performance. Engineered and fabricated at the factory, Republic drainage structures are delivered to you ready for assembly.

Simplified design eliminates the need for highly skilled labor or complex equipment. Other Republic fast-assembly features include: sections of optimum sizes for easy handling and erection, specially designed bolt that may be tightened from one side only.

For additional information on Republic Sectional Plate Pipe-Arch and other problem-solving drainage products, simply contact the Republic Drainage Products Manufacturer nearest you (see list at left), or mail coupon.

Manufacturers of Republic Drainage Products

Bark River Culvert & Equipment Co.
Escanaba, Mich.

Beall Pipe & Tank Corporation
Portland, Ore. • Boise, Idaho

Bluegrass Pipe & Culvert Co.
Louisville, Kentucky

The Boardman Co.
Oklahoma City, Okla. • Tulsa, Okla.

Carolina Culvert & Metal Div.
Florida Steel Corp.
Statesville, N. C.

Central Culvert Corporation
Alexandria, La.

Choctaw, Inc.
Memphis, Tenn. • Birmingham, Ala.

Dominion Culvert & Metal Corp.
Roanoke, Va.

Eaton Metal Products Corp.
Omaha, Neb. • Hutchinson, Kan.

Eaton Metal Products Company
Billings, Mont.

Empire State Culvert Corp.
Groton, N. Y.

Garland Steel Co.
Phoenix, Ariz.

Illinois Corrugated Culvert Co.
Bushnell, Ill.

Jansen Bridge & Supply Company
Sandusky, Mich.

H. V. Johnston Culvert Co.
Minneapolis, Minn. • Aberdeen, S. D.

Logansport Metal Culvert Co.
Logansport, Ind.

M & M Hiway Materials Co.
Columbia, Mo.

North Dakota Metal Culvert Co.
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Northeastern Culvert Corp.
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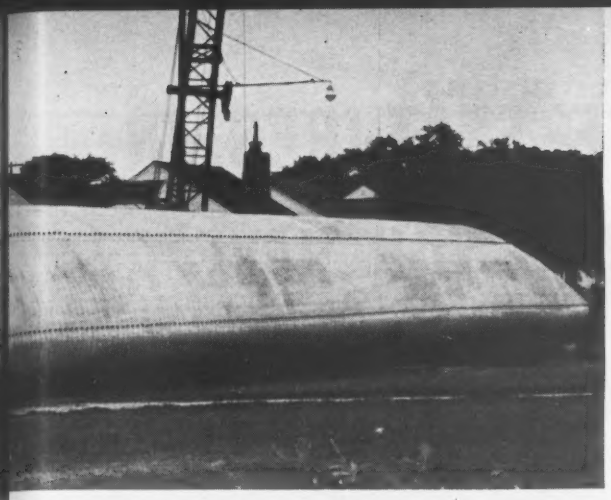
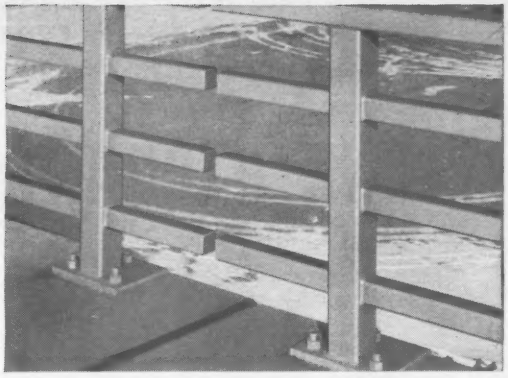
Utah Culvert Company
Ogden, Utah

Wisconsin Culvert Company
Madison, Wis.

Wyatt Metal & Boiler Works
Dallas, Tex. • Houston, Tex.

EASY PLACEMENT. After assembly on the shoulder of the highway, the 22-ton structure was lifted by cranes into the excavation. Total placement time—2½ hours. The pipe-arch, which replaced a concrete bridge on East Johnson St., Fond du Lac, Wisconsin, was made of 8-gage corrugated sectional plate and measured 10′11″ wide by 7′7″ high.





REPUBLIC SQUARE AND RECTANGULAR TUBING for columns, beams, railings, mullions. Square tubing is offered in sizes up to 5 inches a side; rectangular tubing in peripheries up to 20 inches; up to .250 inch wall. Highly functional, Republic square and rectangular tubular components add a pleasing contemporary appearance. Mail coupon for more information.

REPUBLIC PLASTIC PIPE IN AIR CONDITIONING—2″, 1½″, and 1″ Republic SRK (Semi-Rigid Plastic Pipe) was selected for condensate return lines on 652 American Blower fan coil units that were recently installed in a Cleveland, Ohio, hotel. According to Becker-Seidel-Clark, plumbing contractors, plastic pipe was specified because it could be installed several times faster in a job of this type. Return coupon for details.

REPUBLIC HOOK-ANCHOR-FOUNDATION BOLTS for fast, dependable fastening in highway and building construction. Wide range of types and sizes to meet specific job requirements. Dimensions from ½″ by 6″ (over-all length) to ½″ by 18″ (over-all length). Available fully assembled or non-assembled from stock. Mail coupon.

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World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. EN -8960
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send information on:

☐ Sectional Plate Pipe and Pipe-Arch
☐ Bolt and Nut Products
☐ Architectural Tubing ☐ SRK Plastic Pipe

Name_____ Title_____

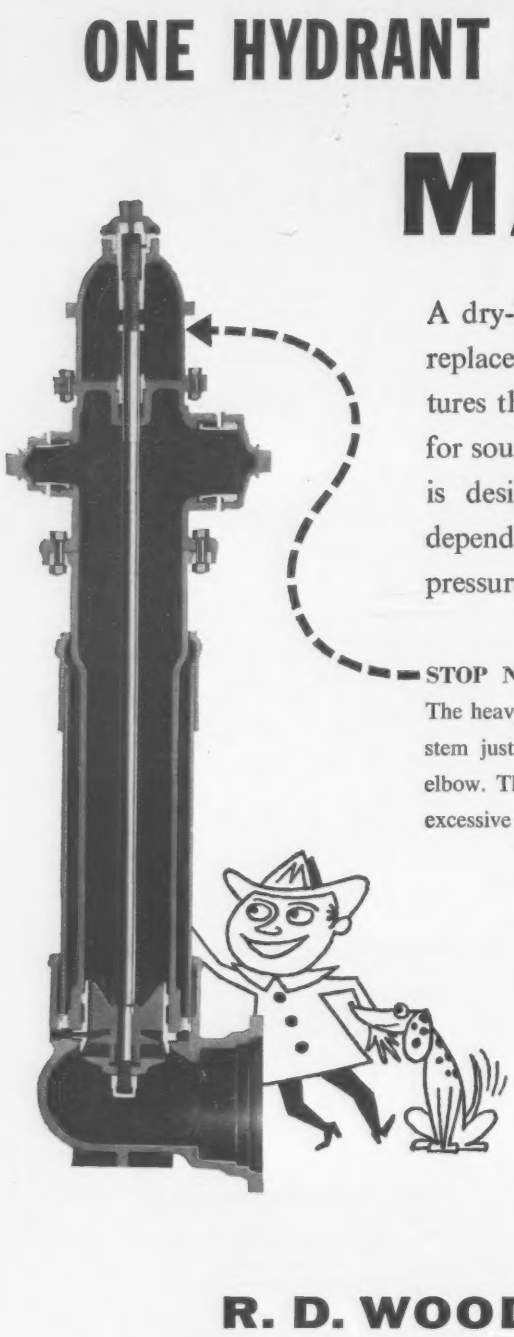
Firm_____

Address_____

City_____ Zone____ State_____

PUT ALL THESE FEATURES IN ONE HYDRANT AND YOU HAVE A

MATHEWS



A dry-head hydrant; adjustable nozzle levels; replaceable barrel—three of many major features that help make Mathews the one hydrant for sound community protection. The Mathews is designed to be always operable, always dependable, always ready to deliver at full pressure.

STOP NUT PREVENTS STEM FROM BUCKLING
The heavy bronze stop nut halts the downward travel of the stem just before the lower end touches the bottom of the elbow. This prevents any buckling stress on the stem when excessive pressure is put on the opening wrench.

AND ALL THESE OTHER FEATURES, TOO:
All working parts contained in replaceable barrel • Head can be faced in any direction • Replaceable head • Any nozzles you specify • Nozzle levels raised or lowered without excavating • Leakproof because stuffing box is cast integral with nozzle section • Operating thread only part requiring lubrication • Protection case of "Sand-Spun" cast iron for strength, toughness, elasticity • With bell, mechanical joint or flange pipe connections

Conform to latest AWWA specifications

R. D. WOOD COMPANY

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

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Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Weymouth**—SCHOOLS—BA 4/1—Town, 111 Middle St., East Weymouth, North Senior High School and vocational school, Commercial St., East Weymouth. $4,113,000. Plans deposit $85. Coletti Bros., 687 Boylston St., Boston, archts. CD 7/28/58.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **Pa., Waynesboro**—SCHOOL—BA 3/24—Waynesboro Area School Auth., Fairview Ave., Senior High School $2,300,000. Plans deposit $50. Edmund George Good, Jr., 904 N. 2 St., Harrisburg, archt. and engr. CD 4/28/58.

▲ **D. C., Wash.**—APARTMENTS—BA 4/6—National Capital Housing Auth., 1729 New York Ave. N. W., DC-1-34 Park-Morton Apartments, 174 dwellings units Park D. and Morton St. N. W. between Georgia Ave. and Warden St., $1,000,000. Plans deposit $30. Keyes & Lethbridge, 1300 Connecticut Ave. N. W., archts. CD 1/20/58.

▲ **N. Y., Stapleton**—SCHOOL—BA 4/7—Supt. Design, Constr. and Physical Plant, Bureau Constr., 4th Fl., 42-15 Crescent St., Long Island City, Zone 1, general constr., plumbing and drainage (incl. heavy kitchen equipt), heating and ventilating, electrical work and lighting fixtures for Junior High School 49, Hill and Warren Sts., Clinton, Richmond Boro. Plans deposit $35 general, $15 each for mechanical trades. CD 10/25/57.

BUILDINGS—SLC

▲ **Pa., Center Square** — LABORATORY — The Ballinger Co., archt., 1625 Race St., Phila., soon lets contract laboratory and office, Whitpain Twp., for Remington Rand-Univac Division, Sperry Rand Corp., 19 St. and Allegheny Ave., Phila. $5,000,000. CD 12/28.

HEAVY CONSTRUCTION—LB & CA

▲† **J. A. Jones Constr. Co.,** Box 966, Charlotte, N. C., U. S. A., LB **$2,731,000,** est. $3,511,952, 1,008 enlisted men's barracks, U. S. Naval Station, NBy-26798, Spec. 26798/59, ARGENTIA, NEWFOUNDLAND. Area P. Wks. Office, New York, Rm. 633, Federal Office Bldg., 90 Church St., New York 7, N. Y. Clark, Buhr & Nexsen, Mutual Bldg., Norfolk, Va., archts.-engrs. Bids Mar. 1.

BUILDINGS—LB & CA

▲ **Ross & Pash,** 1165 Harbor Rd., Hewlitt Harbor, N. Y., CA **$7,500,000,** 450 HOUSES, Rte. 440 near Bayonne line, JERSEY CITY, N. J. Newark Bay Homes, Box D, Greenville St., Jersey City, N. J. James Rothstein, 3288 Hudson Blvd., Jersey City, N. J., archt.

▲ **Castle Development Corp.,** 953 Bonifant St., Silver Spring, Md., Owner Builds, **$5,000,000,** 250 HOMES, 265 acres Mateney Rd. and Route 117, GAITHERSBURG, MD.

▲ **Howard Co. Development Corp.,** Allview Dr., Ellicott City, Md., Owner Builds, **$10,000,000,** 478 HOME SUBDIVISION to be known as College Park Woods on Metzerott Rd. near Maryland University, HYATTSVILLE, MD.

SOUTH

BUILDINGS—BA

▲ **Ga., Atlanta**—OFFICE—BA 3/24—Atlanta Gas Light Co., 1240 Caroline St. N.E., 6 story office. $1,000,000. James C. Wise, Simpson, Aiken & Assocs., 873 Spring St. N.W., archts. CD 2/17.

▲ **N. C., Chapell Hill**—MEDICAL SCIENCES RESEARCH—BA 3/31—University of North Carolina, South Bldg., 52,000 sq. ft. medical sciences research bldg., $1,000,000. Plans deposit $100. Extended date. Holloway & Reeves, 714 St. Marys St., Raleigh, archts. CD 2/9.

BUILDINGS—SLC

▲ **N. C., Winston-Salem**—LIFE SCIENCE—Wake Forest College, Winston-Salem, soon lets contract 65,000 sq. ft. Life Science Bldg., Reynolda. $1,100,000. Larson & Larson, Reynolda, archts. CD 10/29.

HEAVY CONSTRUCTION—LB & CA

▲ **FLORIDA**—State Rd. Dpt., Tallahassee, Fla.—**W. L. Cobb Constr. Co.,** Box 977, Tampa, Zone 1, Fla., CA **$1,108,113,** Type 1 b. conc. surf. course and binder course Type 11-B surf. tr. 3.698 mi. SR 687, State Proj. Job No. 15090-3109, Pinellas Co.; Fla.—**W & M Constr. Co.,** Williston, Fla., CA **$560,516,** 8½ in. rock base Type 1-B bt. surf. tr., binder course and Type 1B conc. surf. course, 10.6 mi. SR 45, Fed. Aid Proj. No. F 023-1 (3) Job No. 26030-3111, Alachua Co. Bids Jan. 26, awarded Mar. 2. CD 1/29, under LB.

▲ **ALABAMA**—State Hy. Dpt., Montgomery, Zone 4, **Robert E. Dunn Constr. Co.,** Troy, Ala., CA **$1,001,381,** base and pave 10.613 mi. U. S. 231 between Midland City and Ozark, Dale Co. Bids Feb. 19. CD 2/29, under LB.

▲† **M. T. Reed Co.,** 162 Milsaps Ave., Jackson, Miss., CA **$1,558,333,** bachelor officers' quarters, with mess, Naval Auxiliary Air Station, NBy 27630, MERIDIAN, MISS. P. Wks. Office, Naval Base, Charleston, S. C. Bids Feb. 25. CD 3/2, under LB.

BUILDINGS—LB & CA

▲ **Ruscon Constr. Co.,** P. O. Drawer 837, Charleston, S. C., CA Est. **$2,000,000,** 164 unit MOTOR HOTEL, incl. RESTAURANT, swimming pool and PARKING GARAGE, CHARLESTON, S. C. King & King Motor Court, c/o contractor, Lyles, Bisset, Carlyle & Wolff, 1800 Gervais St., Columbia, S. C., archts.

▲ **Beechwood Development Co.,** c/o D. D. Saye, Saye Bldg., Athens, Ga., Separate Contracts, **$2,000,000,** SHOPPING CENTER, ATHENS, GA. James C. Wise Simpson, Aiken & Assocs., 873 Spring St. N.W., Atlanta, Ga., archts.

▲† **Henry C. Beck Co.,** Fulton National Bank Bldg., Atlanta Ga., CA **$4,871,000,** new facilities for METALS and CERAMICS work Oak Ridge National Laboratory, ORNL X-10 Ara, Inv. 401-60-12A OAK RIDGE, TENN. U. S. Atomic Energy Comn., P. O. Box E, Oak Ridge, Tenn. Bids Feb. 25, CD 3/1, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **O., Cleveland**—RUNWAY—BA 3/31—City, Dpt. Port Control, City Hall, Zone 14, runway extension, 5R-23L, Cleveland Hopkins Airport. $3,800,000. Plans deposit $100. Dalton-Dalton & Assocs., The Arcade, Zone 14, engrs. CD 2/18.

BUILDINGS—BA

▲ **O., Independence**—HIGH SCHOOL—BA 3/29—Independence Bd. Educ., 6565 Brecksville Rd., high school. $1,100,000. Plans deposit $50 for general and trades contract, $15 site work. Ward Conrad, Scheider & Szabo, 1720 Euclid Ave., Cleveland, Zone 15, archts. CD 11/9.

▲ **O., Cleveland**—COUNTY NURSING HOME—BA 3/31—Bd. Comrs. Cuyahoga County, 451 County Administration Bldg., 1219 Ontario St., Zone 13, county nursing home imprvs. $1,500,000. Plans deposit $75. Milo S. Holdstein, 1030 Euclid Ave., Zone 15, archt. CD 11/10/58.

HEAVY CONSTRUCTION—LB & CA

▲ **Charles F. Smith & Sons,** 2600 Far Hill Blvd., Dayton, O. LB **$789,555,** (10 bidders), WW imprvs., Contract No. 5, CANTON, O. City, City Hall, Canton, O. Bids Mar. 1, CD 2/8;
Oberer Constr. Co. 4324 Webster Ave., Dayton, O., LB **$1,527,380,** (10 bidders), WW imprvs., Contract No. 6 (Canton, O.).

▲ **ILLINOIS**—Dpt. P. Wks. & Bldg., Div. Hys., Centennial Bldgs., Springfield,
rejected bids Feb. 19, grade separation, 115th St. over South Expressway, FAI 90 Chicago, Cook Co., LB **$1,123,820;** reconstr. bridge US 66 over RR and Grant Creek, Blodgett, Will Co., LB **$412,173;** grade separation 111th St. over South Expressway, Chicago, Cook Co., LB **$1,322,469;** grade separation, Bluff Rd. over US 66 southwest of Joliet, Will Co., LB **$522,640.** CD 2/24.

▲ **MICHIGAN**—State Hy. Dpt., 732 Mason Bldg., Lansing, Bids opened 3/1,
Mich.—**H. R. Boyd,** 22285 Michigan Ave., Dearborn, Mich., LB **$106,235,** 126 ft. bridge to carry Hoffman St. over Rocky River in Three Rivers and b. conc. surf. on Hoffman St. from US-131 across bridge to Continental Plaza, St. Joseph Co., CD 2/9,
Mich.—**Taber Co.,** 1118 Eastwood S.E., Grand Rapids, Mich., LB **$140,976,** dual bridges to carry U.S. 27 expressway over Au Sable River, 1 mi. east of Grayling, Crawford Co. CD 2/9,
Mich.—**L. W. Lamb Co.,** Box 1102, Holland, Mich., LB **$3,070,777,** grade separation and approaches to carry Grand Rapids expressway (U.S. 131) over Pennsylvania, Chesapeake & Ohio R.R. tracks, Cherry St. and Ottawa and Grandville Aves., Kent Co. CD 2/17.

▲ **MICHIGAN**—State Hy. Dpt., 732 Mason Bldg., Lansing, Bids opened 3/1,
Mich.—**L. W. Lamb Co.,** Box 1102, Holland, Mich., LB **$3,013,631,** 0.6 mi. Grand Rapids Expressway, water main relocation, electrical work from south of Franklin St. northerly to Goodrich St. incl. grade separations at Wealthy St. and vicinity of Buckley St., Kent Co., CD 2/17,
Mich.—**Pierson Contg. Co.,** 200 Eddy Bldg., Saginaw, Mich., LB **$769,906,** 2.3 mi. U.S. 12 expressway (Int. 94) incl. 2 structures and service roads east from Washtenaw-Jackson County line to New York Central R.R. tracks southwest of Chelsea, Washtenaw Co., OD 2/9,
Mich.—**Louis Garavaglia,** 24240 Mound Rd., Center Line, Mich., LB **$1,140,799,** 2.8 mi. dual divided hy. and one structure on 21 Mile Rd. and Jefferson Ave. from Gratiot Ave. U.S. 25 east and south to Selfridge Air Force Base, Macomb Co., CD 2/9,

BUILDINGS—LB & CA

▲ **Robert W. Setterlin & Sons Co.,** 2000 Kenny Rd., Columbus, O., CA Est. **$1,000,000,** 1 story, 83 x 88 ft., rein.-con. brick DIAL CENTER, South Columbus, COLUMBUS, O. Ohio Bell Telephone Co., 950 Huron St., Cleveland, O. Sims, Cornelius & Schooley, 2901 N. High St., Columbus, O., archts. CD 1/28.

▲ **Robert W. Setterlin & Sons Co.,** 2000 Kenny Rd., Columbus, O., CA Est. **$1,300,000,** 3 story BANK addn., modernization and imprvt, FRANKLIN, O. The Ohio Co., 51 N. High St., Columbus, O. Sims, Cornelius & Schooley, 2901 N. High St., Columbus, O., archts. Awarded Mar. 1.

▲ **Sherman Olsen, Inc.,** 219 N. Kirkpatrick St., Chicago, Ill., CA Est. **$6,000,000,** 10 story OFFICE, BLOOMINGTON, ILL. Illinois Agricultural Assn., 43 E. Ohio St., Chicago, Ill. CD 1/19/59.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **South Dakota**—BA 4/13—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., design, manufacture, delivery, installation and testing eight 61579 KVA hydraulic turbine driven alternating current generators for Hydroelectric Power Plant, Big Bend Reservoir Project, near Fort Thompson, IFB CIVENG-25-066-60-48. $10,000,000. CD 2/24.

▲† **Iowa**—BA 4/14—U. S. Eng., Clock Tower Bldg., Rock Island, Ill., Stage I; 1 story, frame field office, approx. 1,799,500 cu. yd. compacted earth fill dam, approx. 2,674,400 cu. yd. common excav., approx. 49,150 cu. yd. stone protection and utilities, Red Rock Reservoir, Des Moines River, Marion Co., about 60 mi. downstream from Des Moines. Railroad terminal facilities are at Pella, Knoxville, Tracy and Oskaloosa. Highway access is available from Iowa State Hys. No. 92 at Knoxville, and No. 163 at Pella via connecting Marion Co. Rd. along a granular surfaced roadway to the site. Waterway transportation is not available, CIVENG-11-117-60-21. $3,000,000. Plans deposit $5. CD 9/15.

BUILDINGS—BA

▲† **Okla., Fort Sill**—MASONRY SHOP—BA 3/29—U. S. Eng., Box 61, Tulsa, Zone 2, 96,100 sq. ft.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

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The Gates Kwik-Seal splice is chemically bonded. The strength of the bond often exceeds the strength even of the rubber—far stronger than government requirements. *You make this strong, permanent splice in just 6 minutes—5 times faster than with former methods!*

As a result, this new Gates splicing method cuts your labor costs and speeds the job.

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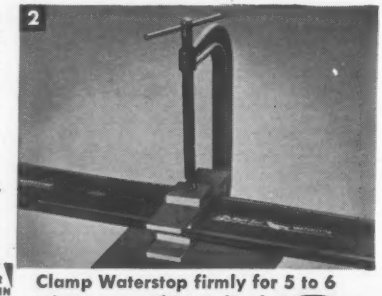
Apply Kwik-Kem bonding chemical to prepared surface.



Clamp Waterstop firmly for 5 to 6 minutes... and it's spliced.

Gates®

Gates Kwik-Seal Waterstop

masonry shop, 24,000 sq. yd. concrete hardstand appurtenances for Dpt. Motor Facilities, ENG-34-066-60-13, $2,500,000. CD 2/24.

BUILDINGS—SLC

▲ **Tex., Fort Worth**—OFFICE—The Equitable Savings Assn., 704 W. 7th St., soon lets contract structural steel and steel decking for 3 story, bsmnt., 100 x 100 ft. masonry, concrete, steel frame office, $1,000,000. Preston M. Geren, 1607 Fort Worth National Bldg., archt. CD 1/22.

▲ **Tex., San Antonio**—OFFICE—Southwestern Bell Telephone Co., 3333 Fannin St., Houston, soon lets contract 6 story, bsmnt., 180,000 sq. ft., air-conditioned admin. office, $2,000,000. Page, Southerland & Page, 602 West Ave., Austin, archts. H. J. Miller, c/o owner, ch. engr. CD 2/24.

HEAVY CONSTRUCTION—LB & CA

▲ **MISSOURI**—State Hy. Comn., Jefferson City, Bids opened 2/26,

Mo.—J. A. Tobin Constr. Co., 3701 Rainbow Blvd., Kansas City, Kan., LB **$628,455** (4 bidders), graded earth, gr. sep., 24 ft. concrete pavement, single and dual lane 1.176 mi. Jackson Co.; LB **$141,283** (4 bidders), graded earth, gr. sep. 24 ft. concrete pavement, single and dual lane 0.439 mi. Cass Co.; LB **$1,378,129** (10 bidders), graded earth, culverts 24 ft. concrete pavt. 11.252 mi. Randolph Co.; LB **$1,524,687** (4 bidders), graded earth, graded sep., 24 ft. concrete pavt., single and dual lane 3.556 mi. Jackson Co.; LB **$776,616** (3 bidders), subgraded, sh. subgs. comp. and 2 conc. pavts., 24 ft. w., sep. hy. med. form 3.566 mi., Buchanan Co.;

Mo.—Reno Constr. Co., P.O. Box 61, Overland Park, Kan., LB **$692,839,** (1 bidder), graded earth, drainage facilities, traffic signal, high type pavement 1.04 mi. Randolph Co.;

Mo.—W. J. Menefee Constr. Co., 2500 W. 16th St., P.O. Box 30, Sedalia, Mo., LB **$2,951,388,** (9 bidders), graded earth, culverts, 2-24 ft. concrete pavements, sep. by median forming div. highway 10.35 mi. Lafayette Co. CD 2/3.

▲† **Utah-Manhattan-Sundt Corp.,** 100 Bush St., San Francisco 4, Calif., LB **$17,209,000,** missile launch complexes at nine locations; each site to incl. launch control center, launching silo, roads, utilities in vicinity of Schilling Air Force Base, ENG-23-028-60-46, SALINA, KAN. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids Mar. 1. CD 2/24.

▲ **Port Comn., Navigation Dist.,** 1519 Capitol Ave., Houston, Tex., rejected bids Feb. 29, World Trade Center, HOUSTON, TEX. Est. **$2,764,000.** CD 2/25.

▲† **Peter Kiewit Sons Co.,** Box 8787, University Park Station, Denver, Colo., LB **$1,298,265,** access roads Lowry Air Force Base, ENG-25-066-60-47, DENVER, COLO. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Mar. 3. CD 2/4.

BUILDINGS—LB & CA

▲ **M. A. Mortenson Co.,** 526 Sexton Bldg., Minneapolis 15, Minn., CA **$1,633,614,** HIGH SCHOOL addn., 5701 Normandale Rd., EDINA, MINN. Bd. Educ., Independent School Dist. No. 273, Edina, Minn. Bids Feb. 9. CD 12/23.

▲ **Farnsworth & Chambers Co., Inc.,** P.O. Box 74, Houston, Tex., CA **$1,076,630,** (base cont.), SCIENCE, PRAIRIE VIEW, TEX. A & M College System of Texas, c/o Bd. Directors, College Station, Tex., for Prairie View College, Prairie View, Tex. CD 2/16, under LB.

▲ **Clarence E. Vollmer Constr. Co.,** 840 N. Main St., Wichita, Kan., LB **$1,443,540,** (5 bidders), general contract 2 story, 170,000 sq. ft. HIGH SCHOOL and swimming pool, southwest corner 53 and Hillside Sts., WICHITA, KAN. Wichita Heights Rural High School Dist. No. 192, 611 E. 37th St. North, Wichita, Kan. Bids Feb. 23. Anderson, Srack & Johnson, 137½ S. Santa Fe St., Salina, Kan., archts.; **Ripstra-Turner Co.,** 1015 E. Douglas St., Wichita, Kan., LB **$475,407,** (8 bidders), mechanical work for high school (Wichita, Kan.).

▲ **H. A. Lott, Inc.,** P.O. Box 25005, Houston, Tex., LB **$1,499,000,** (10 bidders), Tex. 7-6, 150 DWELLING UNITS (streets, curbs, walks, sewers, water, elec., gas, grading and landscaping), BROWNSVILLE, TEX. Housing Authority of Brownsville, 24 Elm St., Brownsville, Tex. CD 2/9.

▲ **Harvey Constr. Co.,** 2925 Richmond Ave., Houston, Tex., CA **$3,000,000,** Coffee Roasting and Packaging PLANT, HOUSTON, TEX. Gerald D. Hines, 2929 Richmond Ave., Houston, Tex. Neuhaus & Taylor, 2710 Danville St., Houston, Tex., archts. Rob. J. Cummins, Bankers Mtg. Bldg., Houston, Tex., engrs. Duncan Coffee Co., lessee. CD 10/27.

▲ **Tellepsen Constr. Co.,** 1710 Telephone Rd., or P.O. Box 2536, Houston, Tex., CA **$2,022,400,** 12 story OFFICE, HOUSTON, TEX. L & R Building Co., Century Bldg., Houston, Tex. CD 3/3, under LB.

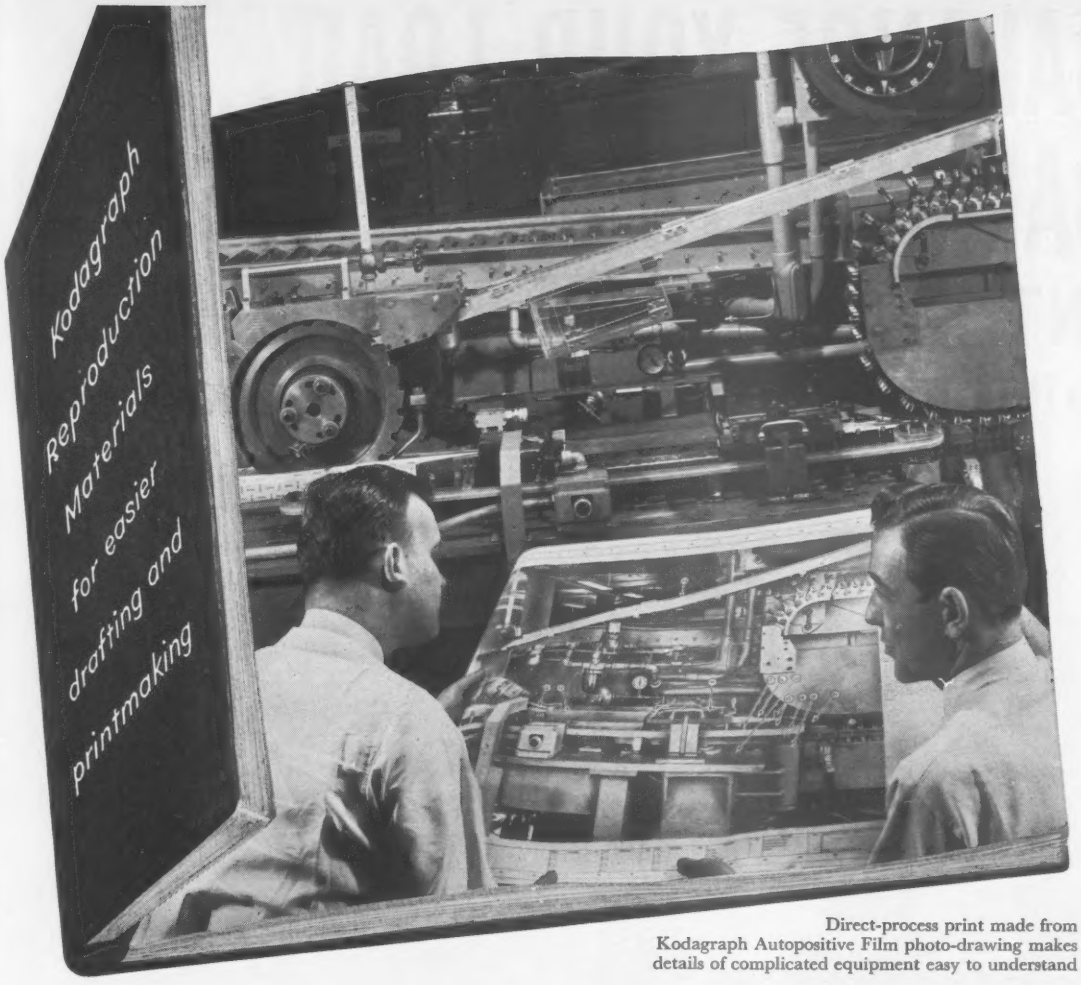
FAR WEST

▲ **Calif., Stockton** — OUT-PATIENT — BA 3/28 — San Joaquin County, Court House, 68,362 sq. ft., steel frame, masonry out-patient bldg., San Joaquin Hospital. $1,700,000. Plans deposit $75. Warren C. T. Wong, 414 E. Fremont St., archt. CD 5/10/57.

▲ **Calif., Los Angeles**—CHRONIC DISEASE UNIT—BA 3/30—Bd. Supervs. Los Angeles Co., chronic disease unit at Rancho Los Amigos Hospital, Hondo. $1,099,223. CD 3/18/59.

▲ **Calif., Fort Ord**—HOUSING—BA About 5/1—U. S. Eng., 180 New Montgomery St., San Francisco, 500

(Continued on page 76)



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Compact-design six-cylinder or V-8 INTERNATIONAL models give you the most advanced combination of engine and semi-automatic transmission in the business. There's perfect unit-to-job balance hilly country or flat. Husky, all-truck power to 345 cu. in. has the guts to pull out of a "hole" or pull ahead on the road. Select-O-Matic transmission (optional) tames every ounce of power for complete control and smooth application whatever the conditions. Shock-load to rear axle is virtually eliminated. Six-wheel models to 33,000 lbs. GVW.

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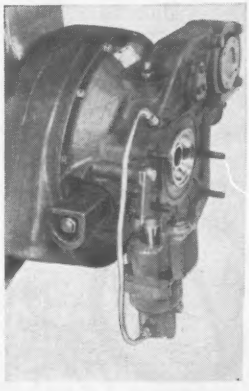
Dependable! From reinforced cabs to extra-husky frames, V-8 powered INTERNATIONAL six-wheel trucks are quality built for fast-moving dependability. Rugged power trains including up to 549 cu. in. V-8 engines and standard differential lock-out are factory matched for heavy-duty use. Special truck pistons and rings cut oil consumption. Metered-flow water jacket evens engine temperature. Finish-honed replaceable exhaust valve guides and self-aligning hydraulic tappets further reduce nominal downtime. COE and conventional models to 65,000 lbs. GCW.

Tough! Rugged, six-wheel INTERNATIONAL transit-mix chassis are available with six-cylinder engine options offering up to 501 cu. in. displacement. Every pound-foot of engine torque is multiplied by an over-all gear reduction of over 100-to-1. The powerful result is dependable, smooth-working tandem performance that keeps heavy-duty payloads moving on schedule—cuts cost with reduced operating expense and downtime. 34,000 lb. tandems, 15,000 lb. front axles. Optional power steering—diesel engines to 175 hp.

Now increase payloads and working life with direct drive flywheel power take-off!

New INTERNATIONAL factory mounted option on heavy-duty "six" or V-8 engines eliminate power take-off at front end. Direct gear drive off flywheel gives you up to 75 hp. at output shaft. There are no belts to replace, no excessive parts to wear out . . . maintenance and downtime are kept to minimum.



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It's precisely right on Arkwright!

Arkwright-Interlaken, Inc.

ARKWRIGHT
FINISHING DIVISION

(Continued from page 72)

unit Capehart Housing, Fort Ord No. 3. $8,000,000. Extended date. CD 2/3.

HEAVY CONSTRUCTION—LB & CA

▲† **Marshall & Haas**, Belmont, Calif., CA $1,422,720, earthwork, conc. lining and structures, Welton-Mohawk main conveyance channel, Gila Proj., Spec. DS 5264, ARIZONA. Bureau Reclamation, Dpt. Interior, Bldg 1 A Denver Federal Center, Denver, Colo., Bids Feb. 4, awarded Mar. 1, CD 2/3, under LB.

▲ **OREGON**—State Hy. Comn., Salem, Bids opened 3/1, Ore.—**Roy L. Houck Sons**, 1585 N. 20th St., Salem, Ore. LB $725,392, (14 bidders), grading 3.35 mi; 3 concrete structures, Evans Creek-Homestead section Pacific Hy., Proj. FAIHP I-5-1(8)46 Jackson Co.; $794,219 (16 bidders), grading 2.7 mi., 3 concrete structures Homestead-Rock Point section Pacific Hy., Proj. FAIHP I-5-1(19)44, Jackson Co.;
Ore.—**Keystone Constr. Co.**, Box 55 Prineville, Ore., LB $1,560,015, (18 bidders), grading 9.99 mi. Baker-Pleasant Valley section Old Oregon Trail Hy., Proj. FAIHP I-80N-7(1)306, Baker Co.;
Ore.—**Warren Northwest**, Box 5072, Portland, Ore. LB $786,976, (10 bidders), paving, signing 9.78 mi. Lancaster Drive-Sublimity Gun Club section North Santiam Hy., Proj. FAP S 265(8) and S-220(4), Marion Co. CD 2/24.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, Bids opened 3/2,
Baldwin Contg Co., Marysville, Calif. and **J. W. Briggs**, Redding, Calif., LB $1,190,000 grading, surf. to reconstr. and realign 5 mi. US 299, Trinity Co. CD 2/5.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St; Los Angeles,
Silva and Hill Constr. Co. and **Jack L. Adams Constr. Co.**, 1148 N. San Gabriel Blvd., South San Gabriel, Calif., LB $3,768,522, (9 bidders), grading, paving 8.5 mi. 4-lane Freeway U. S. Hy. 101 between ElSueno Rd. west of Santa Barbara and ½ mi. northwest of Elwood Overhead, Incl. 5 Interchanges and 2 bridges, Santa Barbara Co. Mar. 2. CD 1/28.

▲ **Guy F. Atkinson Co.**, 10 W. Orange St., South San Francisco, Calif., CA $2,420,000, grading site for Diamond Heights Redevelopment Project, South San Francisco, SAN FRANCISCO, CALIF. Redevelopment Agency, City and San Francisco County, 153 7 St., San Francisco, Calif.

▲ **W. J. Nicholson Co., Inc. & Shanley Constr. Co.**, 805 Kifer Rd., Santa Clara, Calif., CA $1,499,444, precast concrete fdns., brick walls, water treatment plant, storage tanks, operations bldg., sand filters, SANTA CRUZ, CALIF. City, City Hall, Santa Cruz, Calif. Bids Jan. 19. CD 1/27, under LB.

BUILDINGS—LB & CA

▲ **Robert E. McKee, Inc.**, 4701 San Fernando Rd., Los Angeles, Calif., CA Est. $3,000,000, Scottish Masonic Rite TEMPLE, 4373 Wilshire Blvd., LOS ANGELES, CALIF. Scottish Rite Cathedral Assn., 929 S. Hope St., Los Angeles, Calif. Wm. D. Coffey Assocs, Inc. & Millard Sheets, 649 South Olive St., Los Angeles, Calif., engrs. Bids July 17, awarded Feb. 25 CD 7/7.

▲ **F. P. Lathrop Constr. Co.**, 800 University Ave., Berkeley, Calif., CA $1,162,000, 60,000 sq. ft. COUNTY LIBRARY and OFFICE, Oak Park Blvd., School St. and Santa Barbara Rd., Pleasant Hill, MARTINEZ, CALIF. Contra Costa County, Courthouse, Martinez, Calif. Bids Feb. 16. CD 2/25, under LB

CANADA

BUILDINGS—BA

▲ **Que., Quebec City**—POST OFFICE—BA 5/4—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., 5 story, 164 x 234 ft., 122,000 sq. ft., rein.-con., granite post office. $3,000,000-$5,000,000. Plans deposit $250. Maurice Mainguy, 175 St. Jean St. and Leo Turcotte, 466 de la Couronne St., both of Quebec City, archts. Dufresne & Mainguy, 915 St. Cyrill St., Quebec City, engrs. CD 1/12.

HEAVY CONSTRUCTION—LB & CA

▲ **Perini Ltd.**, 49 Jackes Ave., Toronto, Ont., **Johnson-Kiewit Subway Corp. and Peter Kiewit Sons of Canada Ltd.**, 1587 W. 8th St., Vancouver, B. C., CA $7,431,506, approx. 2,900 lin. ft. subway structure, various sections, together with built-in garage for Toronto Parking Authority, University Ave., Subway Stage 1, (Contract U-1), TORONTO, ONT. Toronto Transit Comn., 1900 Yonge St., Toronto, Ont. Bids Feb. 15, awarded Mar. 4. CD 2/18, under LB;
Anglin-Norcross (Ontario) Ltd., 224 Davenport Rd., Toronto, Ont., CA $805,000, two finished station sections, St. Andrews and Osgoode Stations, University Ave. subway, Contract U-1 (Toronto, Ont.).

LATIN AMERICA

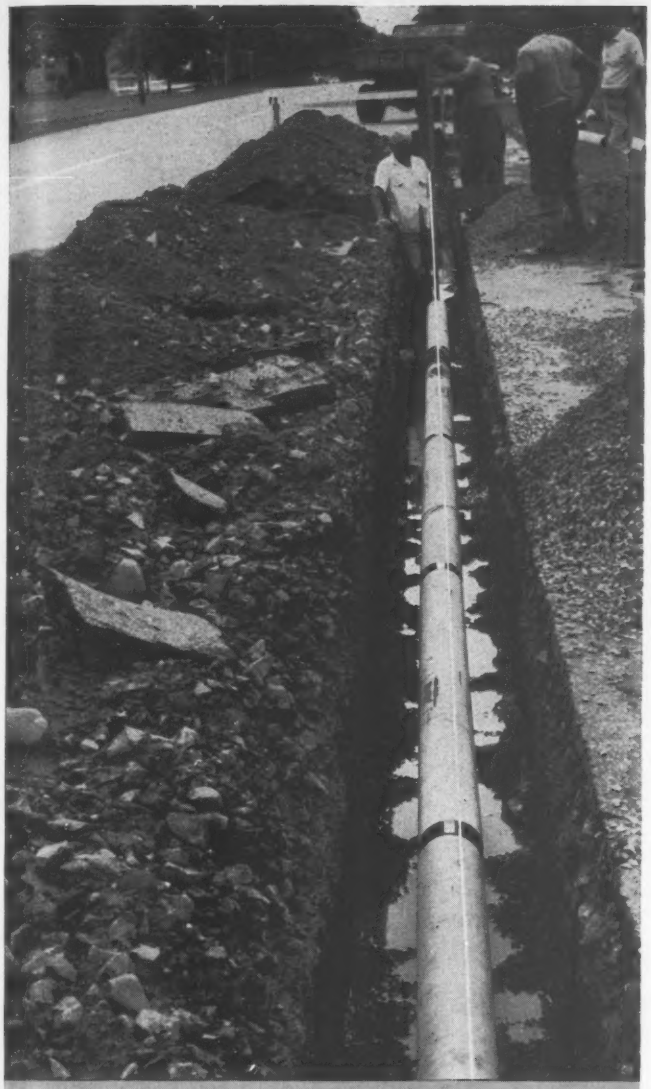
BUILDINGS—BA

▲ **Argentina, Buenos Aires**—PLANT, etc.—BA 3/31—Dpt. P. Wks., Argentina Govt., Buenos Aires, (high octans) gasoline plant, $15,000,000; lubricating oils plant, $10,000,000; naptha reforming plant, $8,000,000.

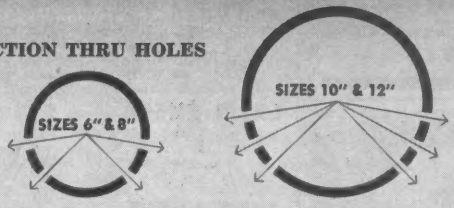
HEAVY CONSTRUCTION—LB & CA

▲ **EL SALVADOR**—Ministry P. Wks., Edificio Morazan 8a, San Salvador,
Fonesca y Compania, El Salvador, CA 14 kilometer section Littoral Hy. between Ahuachapan and Guatemala border. CD 12/28.

(Continued on page 78)



SECTION THRU HOLES



The minimum crushing strengths* of Transite Underdrain Pipe for subsurface drainage systems are shown in the following table:

PIPE SIZE (inches)	TOTAL APPLIED LOAD PER LINEAL FT. (pounds)	PIPE LENGTH (feet)
6	1,000	10
8	1,000	10
10	1,100	13
12	1,200	13

*A.S.T.M. 3-edge bearing method
A complete line of fittings is available including elbows, tees, wyes, crosses, end caps and increasers.

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for subsurface drainage...

TRANSITE UNDERDRAIN PIPE

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- **Resists corrosion**
- **Assures low frictional resistance to flow**
- **Excellent alignment, tight joints, low material cost for new installation economies**

For highways, airports, dams, industrial plant sites—anywhere there's a subsurface drainage job to be done—Johns-Manville Transite® Underdrain Pipe does it effectively and economically.

The plastic coupling used with Transite Underdrain Pipe assures a permanently tight, *flexible* joint . . . keeps out water-borne silt and maintains permanent pipe alignment. And, because of Transite's long (10 ft. and 13 ft.) lengths, fewer joints are needed in the line.

Made of tough, durable asbestos and cement, Transite Underdrain Pipe won't rust. Its interior is made smooth to stay smooth, assisting the flow of water and reducing the opportunity for solids to find a resting place in the line. As a result, the perforations are able to perform their function of permitting entry of ground water into the line , at a maximum rate, where it can be quickly carried off.

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Lancaster, Penna.

(Continued from page 76)

FOREIGN

BUILDINGS—BA

▲ Ceylon—BANK—Bids Asked—Secretary, Central Bank of Ceylon, P.O. Box 590, Colombo, prestressed rein.-con bank. $4,000,000. Bidders should signify interest before March 25, 1960.

HEAVY CONSTRUCTION—LB & CA

▲ PORTUGAL—Junta Autonoma de Estradas, Gabinete da Ponte sobre, Tejo Avenida Dugue de Loule 77-5 Esquerdo, Lisbon,
Sociedad Atlantico Portuguese de Empreesamentos y Expansao Economica, Lisbon, Portugal, LB $45,500,000, bridge over Tagus River at Lisbon. CD 5/13.

PROPOSED PROJECTS

WATER SUPPLY

▲ Ill., North Chicago—City, City Hall, $2,601,000 bond election Apr. 26, WW, sewers, Alvord, Burdick & Howson, 20 N. Wacker Dr., Zone 6, engrs. CD 2/17/56.

SEWERS, WASTE DISPOSAL

▲ Mo., St. Louis County—Metropolitan St. Louis Sewer Dist., 901 Washington Ave., Zone 1, sewers in Fountain Creek Area in Florissant and adjacent areas in St. Louis County bounded by Calverton Park on north to U.S. By-pass 67 between Grandview and Graham Rds. incl. about half of Florissant. Approx. $3,500,000.

▲ Neb., Omaha—City, City Hall, $3,000,000 bond election May 10, sewer constr. Bonds reduced. Larger issue to be voted in Fall. CD 1/14.

▲ N. Y., West Seneca—Towns of Broadway, Union, Cheektowaga and West Seneca, 4620 Seneca St., West Seneca, Sewer District, mains and boosters, 11,000 acres. $2,400,000. Nussbaumer, Clarke & Velzey, Inc., 327 Franklin St., Buffalo, consult. engr.

BRIDGES

▲ CALIFORNIA—State Hy. Div. P. Wks., 1120 N St., Sacramento,
Los Angeles Co.—grade crossing at Woodman Ave., Los Angeles. $1,600,000.

▲ PENNSYLVANIA—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Bedford Co.—grade separation intersection Rte. 96 and Baltimore & Ohio R.R. Lines, $2,000,000. F. S. Poorman, c/o owner, staff engr.

STREETS AND ROADS

▲ NEW YORK—State Dpt. P. Wks., State Office Bldg., Albany,
Suffolk Co.—constr., reconstr. Deer Park Ave. from Montauk Hy., Babylon to No. Hempstead Turnpike, Northport, FAI Project. $12,000,000. To go ahead 1961. CD 3/3/55.

▲ OHIO—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15,
Perry and Muskingum Counties—four mi. Rte. 75 relocation as Roseville bypass, 2-line limited access hy., Roseville. $1,500,000. Arthur J. Handel & Assocs., Newark, engrs.

▲ PENNSYLVANIA—Dpt. Hys., 506 North Office Bldg., Harrisburg,
Bucks Co.—modernization U.S. Rte. 611, between Bucks-Montgomery County Line and Hillside Ave. in Doylestown, 6.36 mi. $2,250,000. McCormick, Taylor Assocs., Suburban Station Bldg., Phila., consult. engrs. F. S. Poorman, c/o owner, engr.

AIRPORTS

▲† Fla., Cocoa—LAUNCHING PAD—National Aeronautics & Space Admin., Atlantic Missile Range, Cape Canaveral, launching pad modification, Pad 12, Cape Canaveral, $4,000,000 (no appropriation); Mercury World Control Center, $2,000,000 (no appropriation).

LATIN AMERICA

▲ Panama, Colon—REFINERY—Refineria Panama, SA (subsidiary National Bulk Carriers and Continental Oil Co., 1300 Main St., Houston, Tex., U. S. A.), 30,000 bbls. daily refinery, Payardi Island. $30,000,000.

PUERTO RICO

▲ Puerto Rico—NUCLEAR POWER PLANT—Puerto Rico Water Resources Authority, San Juan, and U. S. Atomic Energy Comn., Oak Ridge, Tenn., U. S. A., 16,300 kw nuclear power plant. $11,000,000. General Nuclear Engineering Corp., Dunedin, Fla., U. S. A. will make final design. OD 1/15.

FOREIGN

▲ Denmark, Hanstholm—HARBOR—Govt. of Denmark, Copenhagen, new harbor, near Jutland. $15,000,000. To go ahead 1961.

▲ India, Hirakud—ROLLING MILL—Indian Aluminum Ltd., sub. Aluminum Ltd., Sun Life Bldg., Montreal, Que., Canada, rolling mill and extrusion facilities to produce bauxite, alumina and aluminum. $17,000,000.

AMERICANS ABROAD

▲ France, Bethune—PLANT—Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, O., U.S.A., tire

(Continued on page 80)

Armco ASBESTOS-BONDED Pipe being installed at a new plant of the Bestwall Gypsum Company. Lightweight equipment handles 20-foot lengths of pipe. Note water in trench.

Consulting Engineers Chose Armco Pipe for Difficult Industrial Sewer Job

A 3,200-foot combined sanitary and storm sewer was part of a construction project at the new gypsum plant of the Bestwall Gypsum Company, Brunswick, Georgia. Complicating the usual problems were the soil of a tideland area, a high water table, and salt water from the adjacent Atlantic Ocean. Choice of the consulting engineers for this sewer was Armco ASBESTOS-BONDED® Pipe.

These consulting engineers, Johnson & Johnson, Inc., of Chicago, said, "The reasons for selection of Armco ASBESTOS-BONDED Pipe for this installation were: It has excellent corrosion resistant qualities in tideland and salt water conditions as exist in this location; the pipe is of relatively light weight and long lengths, making it suitable for installation in a soil where settlement is a consideration such as in this location; use of positive connections were possible here, thus reducing the problem of the lines pulling apart if settlement occurs; and the pipe was economical to use."

The new Bestwall Gypsum Company plant will make products from gypsum brought in by ocean-going ships.

Armco ASBESTOS-BONDED Pipe, with invert paving plus a double full-coating of asphalt, was supplied in diameters from 8 to 30 inches. Mechanical contractors on the project were James E. Smith & Sons, Inc., of Louisville and Atlanta.

Write us for factual data on Armco Corrugated Metal Structures for sewers and other drainage applications. Armco Drainage & Metal Products, Inc., 4010 Curtis Street, Middletown, Ohio.

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(Continued from page 78)

and synthetic rubber plant. $3,000,000. CD 10/14, under France.

PUBLIC BUILDINGS

▲† **Ala., Decatur**—POST OFFICE, etc.—General Services Admin., 19th and F Sts. N. W., Wash., D. C. post office and federal office, $1,761,000 (no appropriation).

▲ **Ariz., Tucson**—SCHOOLS—City, City Hall, voted $9,990,000 bonds schools, incl. high school, $5,148,000.

▲ **Ark., North Little Rock**—HOSPITAL—North Little Rock Hospital Comn., 2004 Mass St., plans by John Parks Almand, 1305 Louisiana St., Little Rock, hospital. $2,250,000. Bids about 5/1. CD 4/11/57.

▲ **Calif., Roseville**—SCHOOL—Roseville City Elementary School Dist., Box 791, $700,000 bond election Apr. 26 and $1,200,000 State Aid, school. $1,920,000.

▲ **Calif., San Jose**—SCHOOLS—Alum Rock Union Elementary School Dist., 149 N. White Rd., plans by Clyde D. Goudie, 307 Phelan Ave., 9 elementary schools. $9,250,000. CD 2/15.

▲ **Colo., Fort Logan**—HOSPITAL—State of Colorado Planning Div., State Capitol, Denver, plans by T. H. Buell & Co., 730 14 St., Denver, Mental Hospital, 300-bed facility for 1,000-1,200 patients. $4,945,000. CD 1/26.

▲ **Conn., Groton**—SCHOOLS—Town, Town Hall, voted $1,650,000 bonds Jan. 26, schools, Scholfield, Lindsay & Liebig, 309 State St., New London, archts CD 1/26.

▲ **Conn., Torrington**—SCHOOL—Town, Town Hall, plans by Nichols & Butterfield, 998 Farmington Ave., West Hartford, high school, Elise Besse Park, $3,500,000. Marchant & Minges, 1007 Farmington Ave., West Hartford, consult. engrs. Engineering Services, Inc., 2846 Main St., Glastonbury, soil engr. CD 10/23.

▲ **Ga., Eatonton**—PRISON—Georgia State Dpt. Corrections, 415 Capitol Bldg., Atlanta, plans by Albany Architects & Engineers, P.O. Box 1778, Albany, State Prison, $4,000,000.

▲ **Me., Millinocket** — HIGH SCHOOL — Town, Supt. Schools, High School Bldg., plans by Alonzo J. Harriman, Inc., 292 Court St., Auburn, high school. $1,500,000. Constr. 1960.

▲ **Md., Rockville**—SCHOOLS—Montgomery County Bd. Educ., Rockville, plans by Johannes & Murray, 855 Pershing Dr., Silver Spring, Md., Wheaton-Kensington High School between Wisconsin Ave. and Viers Mill Rd., Kensington, $2,500,000; plans by Stanley Arthur, 7939 Norfolk Ave., Bethesda, Md., West Bethesda Junior High School, Bethesda, $1,800 000.

▲ **N. H., Swanzey** — COOPERATIVE HIGH SCHOOL — Union School Dists. No. 25 and 38, cooperative high school for Towns of Marlboro, Winchester, Fitzwilliam, Troy, Richmond, Roxbury and Swanzey. $1,800,000. Constr. late 1960.

▲ **N. J., Mount Freedom**—SCHOOL—Bd. Educ., Randolph Twp., voted bonds Jan. 19, high school, $2,100,000. Epple & Seaman, 901 Broad St., Newark. Tentative bids date June 15. CD 12/11.

▲ **N. J., Newark**—LAW CENTER, etc.—Rutgers University, College Ave., New Brunswick, plans by Kelly & Gruzen, 60 Park Place, Newark, law center and bldgs., Newark campus of Rutgers University, $10,000,000. Roy F. Larson, Harberson, Hough, Livingston & Larson, 117 S. 17 St., Phila., Pa., superv. archts. CD 12/14.

▲ **N. J., New Brunswick**—DORMITORIES—Rutgers University, College Ave., plans by Scrimenti, Swackhammer & Perantoni, 205 West Main St., Somerville, women's dormitories group, Douglas College campus of Rutgers University. $1,750,000. Roy F. Larson, Harbeson, Hough, Livingston & Larson, 117 S. 17 St., Phila., Pa., superv. archts. CD 12/14.

▲ **N. M. Carlbad**—HIGH SCHOOL, etc.—City, City Hall, voted $1,950,000 bonds, high school and school addns.

▲ **N. Y., Brentwood**—SCHOOLS—Bd. Educ. plans by Office of Louis E. Jallade, 597 Fifth Ave. New York, Zone 17, Junior-Senior High School, 2 elementary schools and elementary school addn. $2,500,000. Bids in April.

▲† **N. Y., Brooklyn**—POST OFFICE & IMPRVS., etc.—General Services Admin., 19th and F Sts. N.W., Wash., D. C., modernization U. S. Post Office and Court House. $1,543,000 (no appropriation).

▲ **N. Y., Dunkirk**—SCHOOL—Bd. Educ., referendum Mar. 22, Junior-Senior High School, $3,994,000. CD 12/17.

▲ **N. Y., New York**—TERMINAL MARKET—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, plans by Skidmore, Owings & Merrill, 425 Park Ave., Bronx Terminal Market for Dpt. Markets, Halleck St. and East Bay Ave. $25,683,000. Madigan-Hyland, 28-04 41 Ave., Long Island City, engrs. CD 5/20.

▲ **N. C., Morganton**—TRAINING SCHOOL—North Carolina State Hospital Bd. Control, 357 Revenue Bldg., Raleigh, plans by Six Associates, Inc., 1095 Hendersonville Rd., Asheville, Training School, Morganton State Hospital. $2,000,000. CD 2/17/60.

▲ **O., Cincinnati**—SCHOOL—Bd. Educ., 608 E. McMillan St., plans by A. M. Kinney, Inc., 2912 Vernon Pl., 1 and 1½ story, Aiken Senior High School, $2,390,000. Constr. Spring-Summer 1960. CD 11/10/58.

▲ **O., Indian Hill (P.O. Cincinnati)**—SCHOOLS—Indian Hill Exempted School Dist., 62525 Drake Rd., bond election May 3, elementary and high school addns. $1,925,000. C. M. Pattrick, c/o owner engr.

▲ **Pa., Bloomsburg**—SCHOOL—Central Columbia County Joint School Dist. R.D. 5, secondary school. $2,300,000.

▲ **Pa., Ellwood City** — SCHOOL — Ellwood City Area Joint School Dist., plans by B. J. McCandless, high school addns., alterations. $1,500,000.

▲ **Tex., Abilene**—SCHOOLS—Abilene Ind. School Dist. voted bonds Feb. 23, Junior High School No. 1, $1,825,000; Junior High School No. 2, $1,500,000; School Auditorium, $425,000. CD 2/18.

▲ **Tex., Houston** — HOSPITAL — City, City Hall, and Harris Co., Comrs. Court, Courthouse, plans by Finn, Maddox & Johnson, Bankers Mortgage Bldg., Phase No. 3, 350-bed hospital, Texas Medical Center, $8,750,000. Bids About May. CD 5/26/54.

▲ **Tex., Waco** — HIGH SCHOOL — Waco Ind. School Dist., plans by Witt & Bush, 2125 Austin Ave., high school, $2,000,000. Yandell, Cowan & Love, Fort Worth National Bank Bldg., Fort Worth, consult. engrs. CD 4/23.

▲ **Wash., Olympia**—STATE OFFICE—State Capitol Com., plans by Harmon, Pray & Detrich, 2000 5th Ave., Seattle, Zone 1, two 4 and 7 story state office bldgs. $6,500,000. Bids this year. CD 8/21.

▲ **Wash., Tacoma** — PARKING GARAGES — City, City Hall, 2 downtown parking garages. $2,400,000. CD 7/25/57, under Unclassified.

COMMERCIAL BUILDINGS

▲ **Calif., Ontario** — DWELLINGS — Dell M. McDaniel, Inc., 705 W. Foothill Blvd., Azusa, plans by S. J. Henderson, 705 W. Foothill Blvd., Azusa, 186 frame, stucco dwellings, west of Mountain Ave. between 4th and "I" Sts., Tract 6209. $1,860,000.

▲ **Calif., Roseville**—SHOPPING CENTER—Jerome C. Draper Jr., Draper Land Co., Russ Bldg., San Francisco, plans by Robert B. Lilies, 340 Pine St., San Francisco, Roseville Square Shopping Center, 1400 car parking, US 40 Freeway and Rocky Ridge Rd. $2,000,000. Novikoff Engineers, 3858 W. Santa Barbara, Los Angeles, Calif., consult. engrs. CD 7/23.

▲ **Colo., Colorado Springs** — SCIENCE, etc. — Colorado College, Campus, science bldg. at Colorado College, $1,500,000; athletic and recreational facilities incl. field house, swimming pool and health center, $1,000,000; music, drama, and dance facilities, $400,000; completion heating system, $175,000.

(Continued on page 84)

(Advertisement)

Industrial Movie Wins National Acclaim

Smith & Loveless Motion Picture on Factory-Built Lift Stations Applauded by Engineers, Contractors—Award at NAHB Show

The first industrial movie program of Smith & Loveless, Lenexa, Kansas, has been applauded by busy engineers, contractors, builders and city officials, according to "Comment Cards" filled

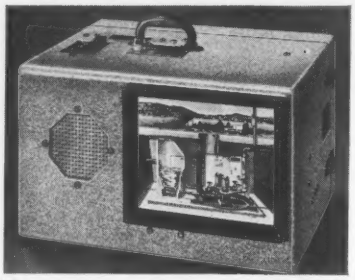
Busy engineers enjoy the convenience of watching the Smith & Loveless movie in their own offices.

out by viewers all over the United States and Canada.

The movie on factory-built sewage lift stations was recently cited for "Exceptional Merit" in the national "Ideas for Home Builders" contest. The award was presented at the Home Builders Show in Chicago. The contest judges gave special praise to their method of showing the movie to prospective customers via a special-built, continuous projector which requires no external screen, no rewinding or rethreading of the film. The projector, called a Cinesalesman, looks like a portable television set and is ideal for office calls on busy executives.

Movie Features Plant Tour

The color-sound movie emphasizes the manufacture, operation, design features and installation of Smith & Loveless factory-built sewage lift stations, used in municipal and suburban developments to raise sewage to a higher level or treatment facility. It includes a complete tour of the world's largest lift station manufacturing plant, located near Kansas City.



The continuous projector used by Smith & Loveless sales representatives.

Special Showings Arranged

Copies of the award-winning film are available for meetings and classroom use. Special showings can be arranged by contacting **Department 140, Smith & Loveless, Division—Union Tank Car Company, Lenexa, Kansas.** 2453

Hauling heavy construction equipment in all kinds of weather over all kinds of terrain—that's a job for this Autocar diesel . . . nothing less.

"For this we need Autocar . . . nothing less can handle it"

Listen to an experienced contractor. When he says, "This is a job for Autocar," he *knows* what he's talking about.

He's thinking of the tight schedule he's got to meet . . . the extra-size loads where he must have tremendous power built into a tractor that won't pull apart. He's reminding himself that every Autocar he's ever worked with was custom-engineered to its job—and that every component in it was precision-built to stay on the job. His faith in Autocar grows out of his own personal experience with Autocar at work.

The jobs Autocars perform in construction — hauling big bulldozers, shovels, dumploads over rough terrain—these expose the fact that since nobody *builds* like Autocar, nothing *matches* Autocar. That's how this tractor got to be known everywhere as the "World's Finest."

White-Autocar comprehensive service throughout the U.S.A. Don't settle for less than Autocar!

Autocar
"World's Finest"

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Exton, Pa.

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39,140 feet of it!

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In a civic structure such as this 2 key requisites are: the lasting qualities of the materials used in construction and low maintenance once the building has been completed.

Through the centuries copper has proved itself to have both of those requisites.

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"Over the years we've guarded our reputation most carefully by the wide use of copper water tube and by paying careful attention to how it is installed. We've found it pays. To us, building for keeps means copper of course."

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Cobo Hall, Detroit
Revere Copper Water Tube Distributors:
NELSON COMPANY . . . DETROIT NIPPLE WORKS, both of Detroit

(Continued from page 80)

▲ **Conn., Plainville**—HOUSES—Arthur Primus, Bristol Rd., Waterbury, 300 houses "Hilltop Homes," Camp St. $3,000,000.

▲ **Conn., Waterbury**—HOUSES—Meadow Homes, Inc., Oronoke Ave., 101 houses, Meadow Homes, Oronoke Ave. $1,616,000.

▲ **Fla., St. Petersburg**—APARTMENT—Stan Freifeld & Assocs., 6012 Seminole Rd., north of St. Petersburg, 10 story, 200 unit apartment, 3 story medical offices, 3200 5 Ave. N. $2,500,000.

▲ **Hawaii, Honolulu**—APARTMENT—HOTEL, etc.—Hawaiian Tradewinds Corp., 738 Mokapu Rd., plans by Edwin L. Bauer, 1521 S. King, Honolulu, 22 story, 600 unit Tradewinds Co-operative apartment-hotel, swimming pool. $10,000,000.

▲ **Hawaii, Kona**—TOURIST RESORT—Albert Soloff, c/o G. H. Anderson & Assoc., Inc., archt., Rm. 308, 931 University Ave., Honolulu, 200 unit tourist-resort, swimming pool. $2,500,000.

▲ **Ill., Arlington Heights**—SCHOOL—Catholic Archdiocese of Chicago, 719 N. Wabash Ave. and Clerics of St. Viator Euclid, 2 and 3 story, limestone, St. Viator High School, incl. gym and swimming pool, Euclid and Oakton Sts. $2,500,000. Bids in March.

▲ **Ill., Chicago**—APARTMENTS, etc.—Building Services Employees International Union, 312 W. Randolph St., plans by Bertrand Goldberg Assocs., 721 N. Michigan Ave., 60 story, twin circular rein.-con. apartments, 10 story office, skating rink, Yacht club and marina, Chicago River, State and Dearborn Sts. $36,000,000. To go ahead in May. CD 9/17.

▲ **Ill., Pekin**—SHOPPING CENTER, etc.—Monge Real Estate Agency, Inc., 1500 N. 8th St., shopping center, 500 home subdivision, 6 acre lake, Rte. 9, Sunset Hills area, $3,500,000. Constr. in Spring.

▲ **Md., Oxon Hill**—APARTMENT—Arthur Pomponio & Sons, Inc., 2222 Wilson Blvd., Arlington, Va., plans by John Jamieson White & Assoc., 1145 19th St. N. W., Wash., D. C., Potomac View Manor Apartment, Oxon Hill and Ft. Foote Rds. $6,000,000.

▲ **Mass., Hudson**—RESIDENCES—East Coast Builders, Campanelli Dr., Braintree, plans by Edward A. J. Poskus, 39 Upland Rd., Brockton, 350 residences, Main, Brook and Parmentar Sts. $5,600,000. Bradford Saivetz & Assoc., Inc., 330 Adams St., Quincy, Mass., engr.

▲ **Mass., Springfield**—INSURANCE OFFICE—Massachusetts Mutual Life Insurance Co., 1295 State St., plans by Hoyle, Doran & Berry, 248 Boylston St., Boston, insurance office addn. $5,000,000. Constr. 1961.

▲ **N. J., Fair Lawn**—HOSPITAL—Lamond Constr. Co., Inc., 141 Broadway, New York 6, N. Y., plans by Leo Kabis, 5 East Main St., Denville, hospital, Morlot Ave. and Rte. 208, $2,000,000. Alexander L. Arthur, 141 Broadway, New York, N. Y., consult. engr.

▲ **N. Y., Glendale**—HIGH SCHOOL—Brooklyn Diocesan Bldg. Office, 191 Joralemon St., Brooklyn, Zone 2, Christ The King Diocesan High School, Metropolitan Ave. and 69th St. $9,000,000.

▲ **N. Y., Port Jefferson**—HOSPITAL—St. Charles Hospital, Prospect St., plans by Crow Lewis & Wick, 200 Fifth Ave., New York, Zone 10, 5 story, 156-bed hospital. $3,500,000. CD 2/3.

O., Ashtabula — Y.M.C.A.-Y.W.C.A. — Ashtabula Young Men's Christian Assn., plans by Green-Smith Assocs., 71 E. Washington St., Painesville, combined Y.M.C.A.-Y.W.C.A. $990,000. CD 4/16.

▲ **O., Olmstead Falls**—HOMES—Oxford Park Inc., 13985 Pleasant Valley Rd., Cleveland, Zone 30, 150 addnl. homes, Oxford Park Development, Subdivisions 2, 3 and 4, $3,000,000; 42 homes, Oxford Park Subdivision No. 1, $924,000.

▲ **O., Westlake**—SHOPPING CENTER—Westown Shopping Center, Inc., 20575 Center Ridge Rd., Cleveland, Zone 16, plans by Rudolph Orgler, 7113 Euclid Ave., Cleveland, Zone 3, 50 unit shopping center, Dover Center and Center Ridge Rds. $5,000,000. Bids soon.

▲ **Tenn., Maryville**—DORMITORIES—Maryville College, Maryville, plans by Morton & Sweester, Journal Bldg., Knoxville, 2 dormitories, stadium addn., science bldg. and auditorium. $6,000,000. CD 8/16/57.

▲ **Tex., Baytown** — BANK-OFFICE — Citizens National Bank & Trust Co. plans by Rusfay, Martin & Reber, 1811 Crawford St., Houston, bank-office, $2,000,000; rein.-con. fdn and basement for Bank-Office, $275,000.

▲ **Tex., Houston**—SHOPPING CENTER, etc.—Oak Village Shopping Center, 1801 Main St., masonry shopping center, $2,750,000; paved area and Auto Center, $95,000; water sys. $55,000, site area earthwork, $62,000, Spring Branche-Memorial area.

INDUSTRIAL BUILDINGS

▲ **Ark., Fort Smith**—PLANT—Eagle-Picher Co., Ohio Rubber Co. Division, Ben Hur Ave., Willoughby, O., plans by Mott, Mobley & Horstman, Merchants National Bank Bldg., 191,000 sq. ft. auto floor mats semi-pneumatic tires, mfg. plant, $2,000,000.

▲ **Calif., San Fernando**—BEER BREWERY—Anheuser-Busch, Inc., 721 Pestalozzi St., St. Louis 18, Mo., 500,000 bbl. per year beer brewery addn. Approx. $6,000,000.

▲ **Colo., Denver** — PLANT — Martin Co., 12250 South Highway No. 75, Littleton, plans by Buell & Co., 730 14 St., 3 story, 100,000 sq. ft. industrial relations bldg. addn. (Titan Missile Plant), $2,000,000; 136,000 sq. ft. inventory warehouse Martin Plant (Titan Missile Project), $1,000,000.

▲ **N. Y., Canandaigua**—PLANT—General Foods Corp., Birds Eye Div., 250 North St., White Plains, N. Y., 180,000 sq. ft. processing and refrigeration plant. Over $2,000,000.

▲ **N. Y., Glen Head**—TRANSISTOR PLANT—C. P. Clare Co., 420 Lexington Ave., New York, plans by Daniel Schwartzman, 12 E. 36th St., New York, 1 story transistor plant. $1,000,000. C. Deane Kent, Grand Central Terminal, New York, consult. electrical engr.

▲ **N. C., Plymouth**—PLANT—Dixon Southern Chemicals, Inc. (Dixon Chemical & Research, Inc. & Southern Starch Industries), 328 Doremus Ave., Newark, N. J., corn starch mfg. plant, $8,000,000.

▲ **Tex., Big Spring**—PLANT ENLARGEMENT—Cosden Petroleum Corp., Petroleum Bldg., Ortho-xylene plant enlargement, $2,000,000.

▲ **Tex., Houston** — PLANT — Krell & Associates, Inc., 12405 Sowden St., absorption plant. $2,750,000.

▲ **Que., Sherbrooke**—FACTORY—Walter M. Lowney Ltd., 350 Inspector St., Montreal, 2 story, rein.-con. candy factory, east of Bourque Blvd. $6,000,000. T. Pringle & Son Ltd., 4795 St. Catherine St. W., Montreal, consult. engrs. CD 1/29/59.

UNCLASSIFIED

▲ **Arkansas and Oklahoma** — TRANSMISSION LINE — Southwestern Electric Power Co., 428 Travis St., Shreveport, La., 49 mi. 161,000 volt transmission line Springdale, Ark. to Boudinot, Okla., incl. substation. $1,500,000. Constr. 1960.

▲ **Calif., Hayward**—STADIUM—City, City Hall, election April 12 to vote amendment to city charter to permit construction of stadium. $7,000,000.

▲ **Del., Wilmington**—WHARF—Wilmington Bd. Harbor Comrs., P.O. Box 1191, pile supported wharf Marine Terminal. $3,000,000. Modjeski & Masters, Forster and 6 Sts., Harrisburg, Pa., consult. engrs. Bids expected early summer.

▲ **New York**—OVERHEAD ELECTRIC TRANSMISSION LINE—Consolidated Edison Co., 4 Irving Pl., New York, N. Y., 345,000 volt overhead electric transmission line from Dunwoodie Substation, Yonkers to Pleasant Valley Substation, Poughkeepsie. $16,000,000.

▲† **Pa., Harrisburg** — ELECTRICAL SYSTEM — General State Auth., 18 and Herr Sts., Harrisburg, recondition electrical and plumbing systems, install bird-proofing and air-conditioning, heating units State Education Building, $3,250,000; recondition electrical and plumbing systems, install bird-proofing and air-conditioning, heating units State Finance Bldg., $3,000,000. A. F. Jones, c/o owner, ch. engr.

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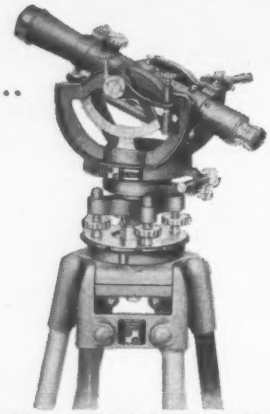

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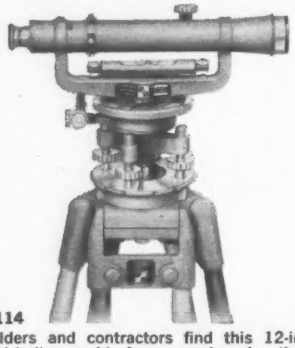

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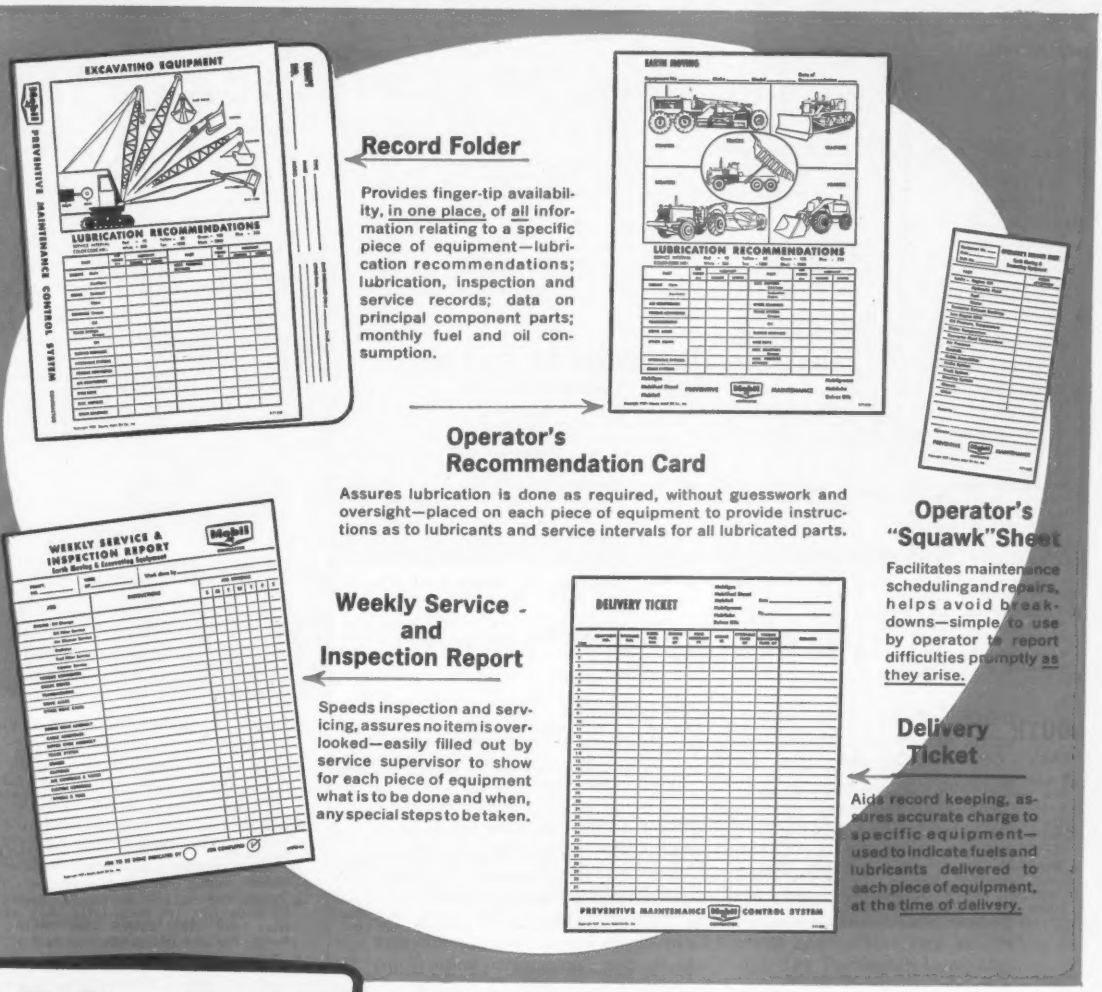
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Speeds inspection and servicing, assures no item is overlooked—easily filled out by service supervisor to show for each piece of equipment what is to be done and when, any special steps to be taken.
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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BUILDINGS—BA

▲ **Conn., Meriden**—INSTITUTE—BA 4/6—State P. Wks. Dpt., 165 Capitol Ave., Hartford, Horace Wilcox Regional Technical School, **$2,833,000.** Plans deposit $50. Walter Crabtree, Jr., 195 Fern St., West Hartford, archt. John P. Legnos, 30 Gillett St., Hartford, consult. engr. Wilcox & Erickson, 11 E. 44 St., New York, N. Y., structural engrs. CD 2/10.

BUILDINGS—LB & CA

▲ **White Oak Excavators, Inc.,** 61 E. Main St., Plainville, Conn., LB **$1,047,746** (12 bidders), pressure conduit, storm drain and sanitary sewer, under N. Y., N. H. & H. R. R. in Ledyard St., Airport Rd. and South Meadows, 1½ mi., HARTFORD, CONN. Metropolitan Dist. Bd., Contract & Supply, 115 Broad St., Hartford, Conn. Bids Mar. 3. CD 2/15.

▲ **Fred I. Merrill,** 187 Sawyer St., South Portland, Me., CA **$1,312,900,** Edward Little HIGH SCHOOL, Franklin site, AUBURN, ME. City, City Hall, Auburn, Me. Bids Feb. 24. CD 2/29, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

BUILDINGS—BA

▲ **Md., Glen Burnie**—HOSPITAL—BA 5/3—North Arundel Hospital Assoc., 110 Crain Hy. N., 5 story, brick, concrete, steel block North Arundel County hospital. $3,000,000. Plans deposit $100. Wheeler, Bonn, Shockey & Assocs., 100 Roesler Rd., Glen Burnie, Md., archts. CD 2/16.

BUILDINGS—LB & CA

▲ **Marshall Management Corp.,** 244 Madison Ave., New York 16, N. Y., Owner Builds, **$5,000,000,** 21 story APARTMENT, 1st Ave. and East 74th St., northeast corner, NEW YORK, N. Y. S. J. Kessler & Sons, 551 5th Ave., New York 17, N. Y., archts. CD 8/19.

▲ **Marshall Management Corp.,** 244 Madison Ave., New York 16, N. Y., Owner Builds, **$5,000,000,** 21 story APARTMENT, 1st Ave. East 81st St. northwest corner, NEW YORK, N. Y. S. J. Kessler & Sons, 551 5th Ave., New York 17, N. Y., archts. CD 8/19.

▲ **Depot Constr. Corp.,** 42-15 Crescent St., Long Island City, N. Y., LB **$3,573,000,** (14 bidders), general contract HUMANITIES, CHEMISTRY, SERVICE and HEATING PLANT BLDGS., State University College on Long Island, STONY BROOK, N. Y. Dpt. P. Wks., State Office Bldg., Albany, N. Y., Bids Mar. 2, CD 1/7;
Heating Maintenance Corp., 220 E. 138th St., New York 51, N. Y., LB **$881,000,** (8 bidders), heating for Humanities, Chemistry, Service and Heating Plant Bldgs., State University College on Long Island (Stony Brook, N. Y.);
Bana Elec. Corp., 45 Gazza Blvd., Farmingdale, N. Y., LB **$729,000,** electrical work for Humanities, Chemistry, Service and Heating Plant Bldgs., State University College on Long Island (Stony Brook, N. Y.).

▲ **Vulcan-Cincinnati, Inc.,** 120 Sycamore St., Cincinnati, O., CA Est. **$3,000,000,** design and constr. HYDROFLUORIC ACID PLANT, Thomas Lane, PAULSBORO, N. J. Dixon Chemical Industries, 1260 Broad St., Bloomfield, N. J. CD 4/20.

SOUTH

HEAVY CONSTRUCTION—BA

▲† **Louisiana**—BA 4/5—U. S. Eng., P. O. Box 267, New Orleans, La., Mississippi River-Gulf Outlet, Dike North of proposed channel, Chandeleur Sound, Sta. 2264 plus 00 to Sta. 2420 plus 00 between the mainland and the 6.0 MLG Contour. Serial No. CIVENG-16-047-60-150. $1,500,000. CD 9/29/59.

▲ **ALABAMA**—BA 4/7—Bureau P. Rds., First National Bank Bldg., Florence,
Project 2B1, Part A, 37 piers and 2 abutments for bridge over Tennessee River, Natchez Trace Parkway, CD 9/21/59 under Mississippi and Tennessee.

HEAVY CONSTRUCTION—LB & CA

▲† **Corbetta Constr. Co.** Inc., 220 E. 42 St., New York, N. Y., CA **$4,432,000** structural portion Terminal Bldg. Dulles International Airport, CHANTILLY, VA., Federal Aviation Agency, 16 and Constitution Ave., Wash., D. C., Bids March 1, CD 3/3 under LB.

▲ **Blount Brothers Constr. Co.,** 79 Commerce St., Montgomery, Ala., LB **$3,762,660,** 1,000,000-1,500,000 bu. GRAIN ELEVATOR, PASCAGOULA, MISS. Jackson Co. Port Auth. and B. Suprvs. Jackson Co., Court House, Pascagoula, Miss. Bids Mar. 8. CD 2/25.

BUILDINGS—LB & CA

▲ **Giant Food Properties,** 1728 L St. N.W., Wash., D. C., Owner Builds, **$5,000,000,** SHOPPING CENTER, Rte. U.S. 1 and Oak St., Beaconsfield, ALEXANDRIA, Va.

MIDDLE WEST

BUILDINGS—BA

▲ **Wis., Elkhorn**—HOME FOR AGED, etc.—BA 3/28—Walworth Co., 3 story, bsmnt., 110,000 sq. ft. home for aged, $2,358,500. Ebling, Plunkett & Keyman, 1220 N. Milwaukee St., Milwaukee, Zone 2, archts. Bids March 1 rejected. CD 1/19.

▲ **Ill., Chicago**—SCHOOL—BA 4/4—Bd. Educ., 228 N. LaSalle St., Wicker Park School. $1,030,000. Samuel A. Lichtman & Loewenberg & Loewenberg, 134 S. LaSalle St., Zone 3, engrs. CD 6/11/57.

▲† **Mich., Oscoda**—HOUSING—BA 4/6—Procurement Office, Wurtsmith Air Force Base, 330 family units Capehart Housing, Wurtsmith Air Force Base (No. 2). $5,000,000. Plans deposit $200. CD 1/12.

HEAVY CONSTRUCTION—LB & CA

▲† **Standard Dredging Corp.,** 200 E. 42nd St., New York 17, N. Y. and **Canadian Dredge & Dock Co. Ltd.,** 600 Harbour St., Toronto 1, Ont., LB **$4,369,170** dredging in Southeast Bend Cut-off Channel, St. Clair River, Ontario approx. 30 mi. northeast of Detroit, Mich. CIVENG 20-064-60-36, MICHIGAN and ONTARIO. U. S. Eng., 1101 Washington Blvd., Detroit, Mich. Bids Mar. 8. CD 2/15.

▲ **Malan Constr. Corp.,** 2 Park Ave., New York 16, N. Y., LB **$3,794,000,** est. $1,910,000, No. 80.85-59-108, Contract RB11, airport hangar, Eastern Airlines, Chicago-O'Hare International Airport, Park Ridge, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago, Ill. Bids Mar. 4. CD 2/10.

BUILDINGS—LB & CA

▲ **Princeton Development Co.,** 5201 Montgomery Rd., Norwood, O., Own forces **$8,800,000,** 550 HOUSES, Rte. 127, Butler Co., FAIRFIELD, O. Clinton & Smith, 101 S. Monument St., Hamilton, O., engrs.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **Texas**—BA 4/5—U. S. Eng., Box 1229, Galveston, dredging Port Arthur Ship Channel, 6,175,000 cu. yds. from Pleasure Pier Bridge south to end of Pleasure Island, Port Arthur, Inv. No. CIVENG-41-243-60-46, $1,000,000. CD 3/1.

▲† **Mont., Glasgow**—NIKE-HERCULES FACILITIES—BA 4/14—U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash., Nike-Hercules facilities, incl. barracks and other bldgs., Glasgow Air Force Base defense area, ENG-45-108-60-96, $2,500,000. Plans deposit $14. Orr Pickering & Assocs., Fratt Bldg., Billings, archts. CD 10/8.

▲† **Mont., Great Falls**—BUILDINGS—BA 4/21—U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash., about 10 masonry bldgs. on rein.-conc. fdns. at each of 2 sites for Nike-Hercules facilities in Malmstrom Air Force Base defense area, with steel towers, utilities, etc., ENG-45-108-60-94, $2,500,000. Plans deposit $19. CD 12/22.

BUILDINGS—BA

▲† **Mo., Fort Leonard Wood**—HOUSING—BA On Or About 4/7—U. S. Eng., 1800 Federal Office Bldg., Kansas City, Mo., 800 unit Capehart Housing, No. 3. ENG 23-028-60-66. Over $10,000,000. Extended date. Plans deposit $122. CD 2/3.

HEAVY CONSTRUCTION—LB & CA

▲† **Utah-Manhattan-Sundt Corp.,** 100 Bush St., San Francisco 4, Calif., CA **$17,209,000,** missile launch complexes at nine locations; each site to incl. launch control center, launching silo, roads, utilities in vicinity of Schilling Air Force Base, ENG-23-028-60-46, SALINA, KAN. U.S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids Mar. 1. CD 3/8, under LB.

BUILDINGS—LB & CA

▲ **Childs Constr. Co.,** 2718 E. Lancaster Ave., Fort Worth, Tex., Est. **$4,000,000,** 1 story, 325,000 sq. ft., Richland Plaza SHOPPING CENTER, Junction Hys. 121 and 183, FORT WORTH, TEX., Les McCarty Development Co., 2718 E. Lancaster Ave., Fort Worth, Tex., Thomas E. Stanley, Rowan Bldg., Fort Worth, archts. CD 11/12/58.

▲ **Fenix & Scisson, Inc.,** 5805 E. 15th St., Tulsa, Okla. CA est. **$1,275,000,** 200,000 bbl. underground propane storage cavern for PLANT, PONCA CITY, OKLA. Continental Oil Co., Ponca City, Okla. CD 1/4/52.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **Calif., Lemoore**—AIRCRAFT MAINTENANCE FACILITIES—BA 4/1—Dist. P. Wks. Office, 12th Naval Dist., Rm. C112, San Bruno, (a) 1 story 81x323 ft. maintenance hangar, 2 story 30x323 ft., administration area, 1 story 50x323 ft. shop (b) three 1 story each 23x99 ft, etc. standard turbo-jet engine test facility incl. underground jet fuel tanks and above ground water storage tank; (c) 1 story, partial mezzanine 90x480 ft. etc., jet engine maintenance shop, Naval Air Station (Part "V"), NBy-25283 Spec. No. 25283/59. Over $1,000,000. CD 9/25.

▲† **California**—BA 5/10—U. S. Eng., 1209 8th St., Sacramento, earthfill main dam, six earthfill dikes and appurtenances, Black Butte Dam Project, Stony Creek, Sacramento River 10 mi. from Orland Tehama Co., Spec. 2640, ENG-04-167-60-25. $10,500,000. Plans deposit $14. CD 9/30.

BUILDINGS—BA

▲ **Alaska, Anchorage**—DORMITORY—BA 3/29—Alaska Methodist University, Anchorage Hotel, 3 story, 39x220 ft., rein.con. dormitory, incl. hot water heating sys., $1,000,000. Plans deposit $50. Manley & Mayer, 210 Loussac-Sogn Bldg., archts. CD 8/28.

▲ **Calif., Los Angeles**—STEAM PLANT IMPRVS.—BA 4/4—Los Angeles Water & Power Dpt., 316 West Second St., circulating water tunnels, Haynes Steam Plant, Seal Beach. $1,000,000. CD 11/20/56.

▲ **Alaska, Anchorage**—CITY HALL—BA 4/4—City, City Hall, constr. city hall. $1,500,000. Plans deposit $50. Edwin B. Crittenden & Assocs., 835 Ninth Ave., Anchorage, Alaska, archts. CD 12/13/57.

HEAVY CONSTRUCTION—LB & CA

▲† **Ralph T. Viola and M. & T. Concrete, Inc.,** 1626 Pine St., Oxnard, Calif., CA $4,740,000 missile project bldg., test project bldg. and addns. to instrumentation bldg. Spec. 24662-59, POINT MUGU, CALIF. Dist. P. Wks. Office, 11th Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Feb. 19 CD 2/26 under LB.

▲ **Fred Macomber,** 3945 Higuera St., Culver City, Calif., CA **$1,151,000,** water reservoir, Riviera Country Club and structure at Mt. Olivette Reservoir, SANTA MONICA, CALIF. City, 1685 Main St., Santa Monica, Calif. James M. Montgomery, 535 E. Walnut St., Pasadena, Calif., engr. Bids Jan. 25, awarded Feb. 9, CD 6/16/58.

BUILDINGS—LB & CA

▲ **Myers Bros.,** 3407 San Fernando Rd., Los Angeles, Calif., CA est. **$4,000,000** 10 story EDISON OFFICE and 4 story PARKING GARAGE, American Ave. and 1st St., LONG BEACH, CALIF. Southern California Edison Co., 601 W. 5th St., Los Angeles, Calif. Kenneth S. Wing, 30 Linden Ave., Long Beach 2, Calif., archt. Bids Jan. 28 CD 1/2/59.

▲ **Moss Bldg. Corp.,** 277 S. Robertson Blvd., Los Angeles, Calif., CA $3,900,000, 13 story, 125 x 210 ft brick APARTMENT, 951, 957 & 969 Hilgard Ave., Tract 9768, LOS ANGELES, CALIF. Park Westwood, 227 S. Robertson Blvd., Los Angeles, Calif. Victor Gruen, 135 S. Doheny Dr., Beverly Hills, Calif., archt.

▲ **Laramore Constr. Co.,** 1111 Beverly Blvd., Los Angeles, Calif., CA **$1,467,530,** 124 stucco DWELLINGS, Tract 3629, GARDEN GROVE, CALIF. Bermuda Homes, Inc., 1111 Beverly Blvd., Los Angeles, Calif.

▲ **Manco Constr. Co., Inc.,** 3754 Long Beach Blvd., Box 7157, Long Beach, Calif., CA **$1,216,000,** CENTRAL BOILER and REFRIGERATION PLANT at Mira Loma Segregation Hospital, Lancaster, Spec. 1825, LOS ANGELES, CALIF. Bd. Supervs. Los Angeles Co., 501 Hall of Records, Los Angeles, Calif. Bids Feb. 17. CD 2/19, under LB.

▲ **Lindgren & Swinerton,** 1631 Beverly Blvd., Los Angeles, Calif., CA **$1,100,000,** 2 story, 106,000 sq. ft. INDUSTRIAL BLDG. addn., 14520 S. Aviation Blvd., LOS ANGELES, CALIF. Pacific Semiconductors, Inc., 10451 W. Jefferson Blvd., Culver City, Calif. A. C. Martin & Assoc., 333 S. Beandry Ave., Los Angeles, Calif., archts.

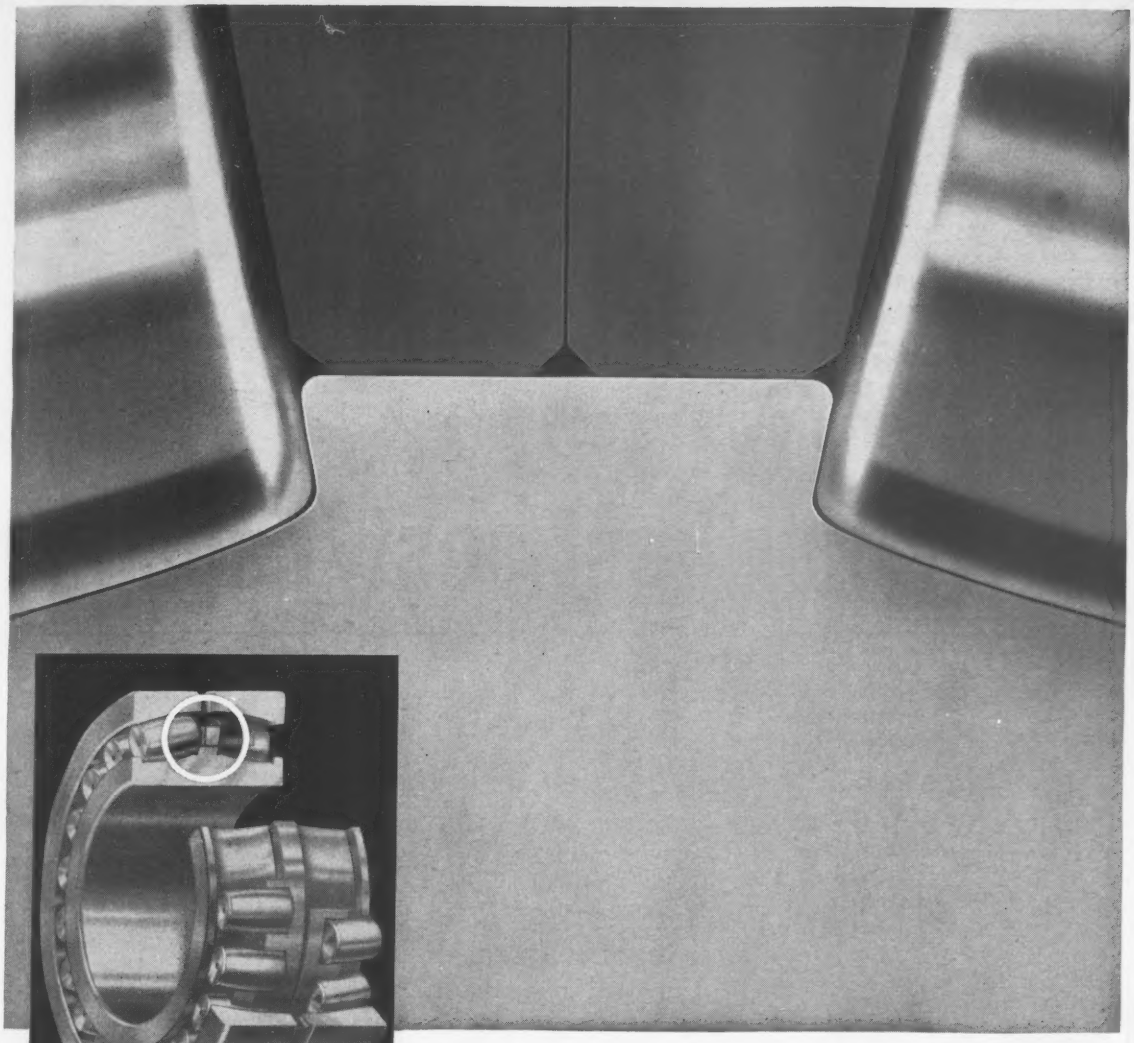
▲ **Victoria Land Co.,** 10835 Santa Monica Blvd., Los Angeles, Calif., CA **$1,003,000,** 88 frame, stucco DWELLINGS, Tract 1110, PORT HUENEME, CALIF. Oxnard Land Co., 10835 Santa Monica Blvd., Los Angeles, Calif.

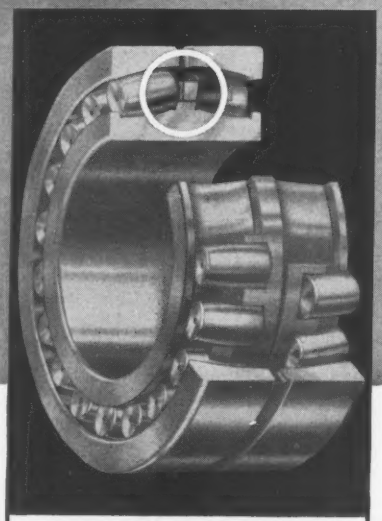
▲ **Douglas Edwards,** 2131 W. Ball Rd., Anaheim, Calif., CA **$1,064,000,** 127 stucco DWELLINGS, 2626 Adrin Way, Tract 3423, SANTA ANA, CALIF. Cardinal Homes, P.O. Box 506, Santa Ana, Calif.

▲ **Christiansen Bros. Inc.** Box 1925, Salt Lake City, Utah, LB **$3,553,113** general contract, SENIOR HIGH SCHOOL, SALT LAKE CITY, UTAH. Jordan School Dist., 9361 South State, Salt Lake City, Utah. Bids Feb. 24. CD 2/8.

BUILDINGS—SLC

▲ **Calif., Los Angeles**—APARTMENTS—Daniel, Mann, Johnson & Mendenhall, archts.-engrs., 3325 Wilshire Blvd., Los Angeles, soon lets contract, one-25 one-15 and one-14 story apartment bldgs. Barrington Plaza, for B. C. Deane Co., c/o archts.-engrs. $15,000,000. CD 6/25/58.





TORRINGTON
Spherical Roller Bearings Offer:

- inherent self-alignment
- conformity of rollers to raceways
- integral center guide flange for stability
- positive roller guidance
- land-riding bronze cages
- maximum radial and thrust capacity
- controlled internal clearance
- electronically selected rollers
- even load distribution
- long, dependable service life

Send for new Torrington Spherical Roller Bearing Catalog #258.

Keystone of Stability!

The integral center guide flange of the *Torrington* Spherical Roller Bearing provides *positive* roller guidance—the one best way to insure operating stability under radial and thrust loads.

Center guide flange surfaces and roller ends are ground to a common spherical radius. The asymmetrical roller seeks this flange under load, bearing lightly but constantly against it. Roller wobble and skewing are eliminated, and stress concentrations leading to early failure are avoided. Bearing operation is cooler, quieter and smoother.

The integral guide flange is adapted from the same principle used in the design of Torrington Tapered Roller Bearings. It is an engineering refinement, based on experience in all types of applications, that insures outstanding performance in your equipment. **The Torrington Company, South Bend 21, Ind.—and Torrington, Conn.**

TORRINGTON BEARINGS

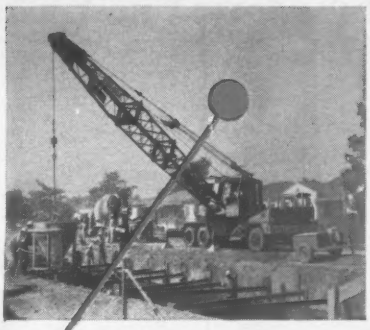
Every Basic Type of Anti-friction Bearing

SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST

Bold new Link-Belt Speeder
truck-crane ratings
...your best cost/capacity

Now with Link-Belt Speeder, you can move up in machine capacity without a price penalty . . . handle bigger loads at extended boom radii!

buy



HC-78A (30-ton rating)

A 30-ton truck-crane at 25-ton cost . . . 8' wide.

Capacity*

100' boom at practical 30' working radius . . . 18,500 lbs.
100' boom at practical 50' working radius . . . . 8,170 lbs.

** with outriggers set*

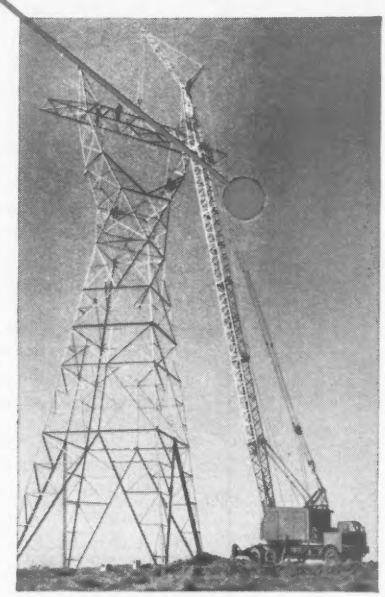
HC-98A (35-ton rating)

At extended boom radii — where the big share of truck-crane profits are made — you out-ton, out-profit competitive rigs. But you pay nothing extra!

Capacity*

100' boom at practical 30' working radius . . . 24,980 lbs.
100' boom at practical 50' working radius . . . 13,060 lbs.
100' boom at practical 60' working radius . . . . 9,900 lbs.

** with outriggers set*



HC-108A (40-ton rating)

Handles lifting capacities at extended boom radii formerly reserved for 45- and 50-ton rigs. Your cost is still 40-ton truck-crane dollars!

Capacity*

100' boom at practical 30' working radius . . . 31,920 lbs.
100' boom at practical 50' working radius . . . 16,960 lbs.
100' boom at practical 60' working radius . . . 13,000 lbs.
100' boom at practical 70' working radius . . . 10,340 lbs.

** with outriggers set*

Greater lifting capacities without a cost penalty is Link-Belt Speeder's newest contribution to truck-crane ratings. Look over the line-up of capacities at the right . . . see why only one line of truck-cranes *reaches out* for bigger profits.

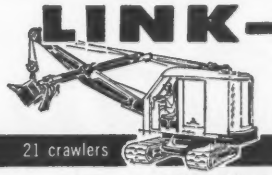
New accuracy, new safety, too, with exclusive Speed-o-Matic power hydraulic controls: independent rapid boomhoist for power-raising and power-lowering of boom; power-controlled load-lowering clutches for either or both main drums.

FAST STRIP-DOWN

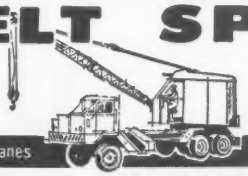
Exclusive Full-Function Design provides separate power flows for each machine operation with every and all functions *completely independent!* Strip-down for legal highway travel (when necessary) as fast as 45-min. on bigger rigs.

Have your Link-Belt Speeder distributor pinpoint your best cost/capacity buy. For detailed catalogs of truck-cranes in the 10- to 40-ton capacity range, write LINK-BELT SPEEDER CORP., Cedar Rapids, Iowa. 112-59N

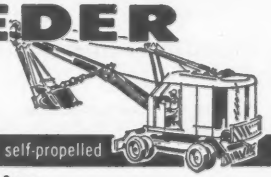
LINK-BELT SPEEDER



21 crawlers

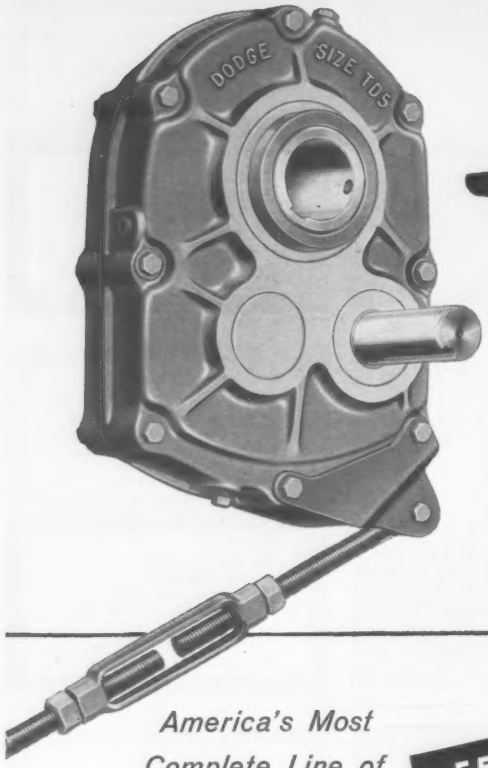


6 truck-cranes



4 self-propelled

It's time to compare . . . with a Link-Belt Speeder



Torque-Arm

THE DODGE DEVELOPMENT THAT CHANGED THE NATION'S HABITS OF SPEED REDUCTION

America's Most Complete Line of Shaft Mounted Speed Reducers

55 MODELS

- Capacities up to 170 hp
- Output speeds from 10 to 400 rpm!
- Single Reduction
- Double Reduction
- 5 to 1 Ratio
- 15 to 1 Ratio
- 25 to 1 Ratio
- Any speed ratio up to 175 to 1 obtainable by selection of pre-determined combination of reducer and V-belt drive.

CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look under "Dodge Transmissioneer" in the *white* pages of your telephone book, or in the yellow pages under "Power Transmission Machinery."

In fewer than ten years, the range of Torque-Arm Shaft Mounted Speed Reducers has increased from 6 to 55 models, to meet the ever increasing demand for this improved method of speed reduction.

By eliminating foundation, sliding base and flexible coupling this modern speed reducer has saved untold installation time and untold dollars of cost.

The rugged semisteel housing developed by Dodge has never been improved upon. It is corrosion resistant—and it has the strength to hold bearing seats in line for the life of the unit.

Dodge design provides wide spacing for the bearings. Loads are carried easily, contributing to Torque-Arm's long life and very high efficiency. The gears are finest quality—helical, heat treated steel.

Torque-Arm mounts vertically or horizontally in any position around the driven shaft. It locks to the shaft on *both* sides of the housing. The holes in the output hub provide simple removal with puller. Overload release and built-in backstop are optional.

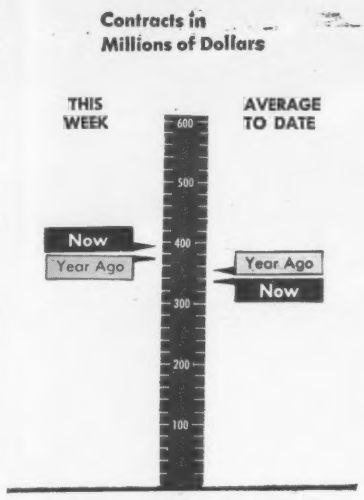
Dodge Torque-Arm is America's most widely used shaft mounted speed reducer. It is stocked by your local Dodge Distributor. Ask him. Or write us for bulletin.

DODGE MANUFACTURING CORPORATION, 6900 Union, Mishawaka, Ind.

DODGE
of Mishawaka, Ind.

Construction Scoreboard

This Week...



AMOUNT OF CONTRACTS LET

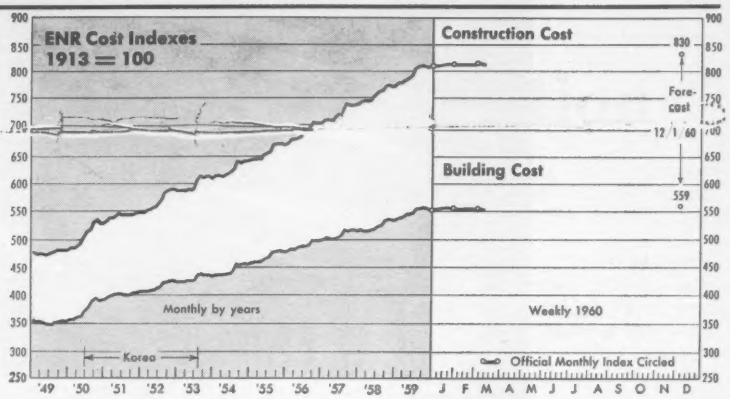
	This Week	Cum. 11 wks 1960	Chge '59-'60 %
	millions		
All Heavy Construction	$374.1	$3,831.5	− 1
By Ownership			
PRIVATE	180.9	2,055.8	+10
PUBLIC	193.2	1,775.7	−11
State & Municipal	100.2	1,296.0	− 8
Federal	93.0	479.7	−17
By Type of Work			
PUBLIC			
Waterworks	5.2	62.6	−40
Sewerage	10.9	113.8	− 4
Bridges*	6.3	184.5	+41
Highways	46.0	485.7	−12
Earthwork, Dams & Waterways	12.2	128.2	−11
Buildings:			
Excl. Housing	76.7	416.9	−20
Housing	1.5	89.0	−29
Unclassified	34.3	296.1	+ 1
PRIVATE			
Buildings:			
Mass Housing	120.5	983.0	+29
Commercial	32.4	368.5	−20
Industrial	24.2	509.5	− 8
Unclassified	3.9	193.7	+103

* Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

New Construction Capital . . .

	Week of Mar. 10	Cum. 10 wks 1960	Chge '59-'60 %
	millions		
Corporate Securities	$ 70.6	$ 471.5	−25
State and Municipal:			
All Except Housing	164.9	1,409.2	+17
Housing	1.3	13.3	+196
Federal Loans	26.0	41.3	+139
Federal Aid	....	....	....
Total Nonfederal	$262.8	$1,935.3	+ 5
Federal Appropriations:			
Projects in U. S.	....	....	....
Outside U. S.	....	....	....
Total New Capital	$262.8	$1,935.3	+ 5


ENR Cost Indexes 1913 = 100
Construction Cost
830
Fore-cast
12 / 1 / 60
Building Cost
559
Monthly by years
Weekly 1960
Korea
Official Monthly Index Circled
'49 '50 '51 '52 '53 '54 '55 '56 '57 '58 '59 J F M A M J J A S O N D

ENR COST INDEXES (1913=100), 20-cities' average	Week of Mar. 10 1960	% Change from Feb. 11 1960	% Change from Mar. 12 1959
Construction Cost	813.36	+0.09	+3.87
Building Cost	555.06	−0.02	+2.40

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

Latest Month . . .

CONTRACTS AWARDED

	1960 Feb. (millions)	1960 2-Mos. (millions)	Percent Change from 1959 Feb.	Percent Change from 1959 2-Mos.
Total U. S. (50 States)	$1,402.2	$2,667.3	+19	+ 1
Private	779.4	1,450.0	+ 9	+14
Public	622.8	1,217.3	+35	−10
State and Municipal	504.6	923.2	+26	− 4
Federal	118.2	294.1	+97	−25
ENR Volume Index, 1913 = 100	486	459	− 6	− 2

NEW CONSTRUCTION CAPITAL

Total U. S. (50 States)	$560.6	$1,440.9	−31	− 3
State and Municipal Bond Sales	368.4	1,117.4	−36	+16
Corporate Security Sales	184.8	312.7	−20	−39
Federal Loans, Aid (nonfederal work)	7.4	10.8	−37	−28
Federal Appropriations, (federal work)	.....	.....	....	....

MATERIALS SHIPMENTS

	1959 & 1960 Nov. (N) Dec. (D) Jan. (J) Feb. (F)	Cum. (No. of Mos.)	Percent Change from Year Ago Mo.	Cum.
Portland Cement, Bur Mines, thous bbls	12,766(J)	12,766(1)	−11	−11
Concrete Paving Awards, PCA, thous sq yd	5,961(F)	13,371(2)	−12	−15
Fabricated Structural Steel, thous tons	209(J)	209(1)	− 7	− 7
Bookings, AISC, thous tons	221(J)	221(1)	− 6	− 6
Reinforcing Bars, Net, AISI, thous tons	213(D)	2,173(12)	+49	+ 7
Lumber, NLMA, mil fbm	2,634(J)	2,634(1)	− 1	− 1
Orders, mil fbm	2,626(J)	2,626(1)	− 6	− 6
Production, mil fbm	2,681(J)	2,681(1)	+ 1	+ 1
Clay Products, Bureau of Census				
Brick, Unglazed, Common, Face, mil bri	541.7(N)	6,778.0(11)	− 7	+12
Vitrified Clay Sewer Pipe, thous tons	146.2(N)	1,838.7(11)	− 4	+11
Structural Tile, Unglazed, thous tons	35.6(N)	475.5(11)	−24	− 6
Asphalt Products, Bureau of Census				
Asphalt Roofing, thous sales sqs	2,881.3(D)	59,821.0(12)	+20	+ 3
Asphalt Siding, thous sales sqs	51.6(D)	925.8(12)	−12	− 8
Aluminum, Wrought, Net, Bur Census				
Sheet and Plate (non-heat treatable), mil lbs	107.9(D)	1,284.0(12)	+31	+36
Wire and Cable, mil lbs	24.1(D)	321.7(12)	− 8	+19
Extruded Shapes (soft alloys), mil lbs	73.0(D)	928.3(12)	+22	+31

EMPLOYMENT AND FAILURES

Contract Const Employment, BLS, thous	2,856(J)	2,856(1)	+22	+22
Contractor Failures, Dun & Bradstreet				
Number	193(J)	193(1)	+ 3	+ 3
Liabilities, thous	$11,993(J)	$11,993(1)	+45	+45

GROWING PLACES

WITH A PARKERSBURG METAL BUILDING

Growing places are going places with Parkersburg pre-engineered metal buildings . . . the best buy, anywhere, anytime. Thousands of hours of engineering experience and production-line efficiency assure top-quality, fire-resistant metal buildings, plus maximum economy of maintenance. Contact Parkersburg for full details about the most complete line of metal buildings in the industry.

Get The FULL-LINE ADVANTAGES

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- Expandable to meet your growth
- Flexible for your unusual problems
- Durably built for your climate without premium cost
- Quick construction saves you valuable time and money

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MBMA METAL BUILDING MANUFACTURERS ASSOCIATION

Building Division • The Parkersburg Rig & Reel Company • Parkersburg, West Virginia

Fewer Controls, More Education

- **That's what the industry needs, speakers report at Chamber of Commerce construction conference.**
- **Mortgage controls and tax laws discourage private capital, contribute to instability.**

Stabilization of the homebuilding industry is necessary to the future of the entire construction field, according to Joseph A. Grazier, president of American Radiator and Standard Sanitary Corp., New York.

"Violent fluctuations in housing activity are unhealthy for everybody," he warned at the National Construction Industry Conference sponsored in Washington, D. C., by the Chamber of Commerce of the United States.

Without continuity in building programs, it is impossible for the home buyer, the homebuilder or the mortgage lender to engage in any sound, long-range planning. And when these are absent, "The penalties of sporadic unemployment and decreased efficiencies must be paid," he said.

He found greatest fault with congressional and administrative fiats aimed at regulating and controlling the flow of mortgage funds.

"The homebuilding industry is encumbered by controls on mortgage interest rates at the very time when money demand is luring private investment capital into other areas offering higher returns," he said.

Mr. Grazier urged all segments of the construction industry to work together to achieve the following:

- Free the interest rates on government-backed housing mortgages from administrative and congressional control and let the rates adjust themselves normally to the demands of the money market.
- Free the Federal Housing Administration from its role as a hostage of Congress by letting it operate with its own funds.
- Insist that the operations of the Federal National Mortgage Association (Fannie Mae) remain wholly within the secondary market function.
- Encourage trustees of corporate pension funds to invest a portion of those funds in mortgages.

Mr. Grazier also called for changes in tax laws that would encourage construction of rental housing for both low-income and middle-income families.

He said that while other areas of investment attract savings by offering profitable yields, rental property rarely promises much more than a 6 or 7% return on the total investment. "If the investor is a corporation or a real estate investment trust, the income from such rental properties will be subject to a tax as high as 52%, thus slashing the final return on investment to about 3% or less," he contended.

He pointed out that under current tax law, only individuals or partnerships can hope to earn a reasonable rate of return on investments in rental housing, and that with few exceptions, "it is impractical for individuals or partnerships to undertake large ventures."

"As long as equity investment in income-producing property remains so unattractive, we shall continue to underbuild for the rental market," Mr. Grazier said.

Robert F. Hastings, executive vice president of Smith, Hinchman and Grylls, architect-engineering firm of Detroit, told the conference that the building industry is losing efficiency and prestige because neither architectural education nor professional attitudes are keeping pace with the industry's needs.

He said a wide cleavage between architects and allied engineers is unfortunately occurring when the interrelationship between these men of mutual interest in structure and objectives is more necessary than ever in the history of building.

Sympathy for each other's objectives and viewpoints is vitally needed today because the interrelated engineering phase of a structure represents 40 to 50% of the whole, but the individuals responsible for its execution are not afforded an equal proportion of education or recognition, Mr. Hastings said.

At a time when schools should provide a greater variety of architectural education and related engineering skills, "colleges are eliminating such courses," he charged.

He said the building industry needs from its architects "materially expanded functional skills in mechanical and electrical systems, along with continued structural knowledge," but only a handful of colleges provides such basic requirements.

If a student wants "a sound education in the engineering arts, he must turn to engineering colleges where there is little interest in building structures. Today's engineers are being prepared to build missiles and space ships, but they are not being educated to build the very factory where such vehicles must be manufactured," according to Mr. Hastings.

He called for "a most acceptable course" of six years duration—three years devoted to establishment of a sound architectural background; the last three years directed to specialties within the field of design, structural and building equipment, community planning, landscaping and allied arts.

Should this be done, it will then become the responsibility of the architectural profession to "accept these graduates as equal members of the design team," he said.

Mr. Hastings said this probably would be the most difficult change. Architects are not yet ready "to receive this new group, either at a level of equality of recognition within professional societies, nor with the financial reward and public acceptance."

School Construction Bonds Of $300 Million Requested

Gov. Edmund "Pat" Brown of California has asked the legislature to authorize a referendum in June on $700 million worth of bond issues. Of the total, $300 million would go for school construction. The remainder is for veterans farm and home loans.

The issues would be on the ballot June 7 when the state holds its primary elections.

The school bonds would provide funds for lending to local school districts. He also urged the legislature to pass a bill lifting the present $8-million-a-month ceiling on loan allocations for school buildings. Governor Brown wants the limit boosted to $10 million a month.

The amount of school construction bonds recommended by the governor is $150 million short of the total urged by some school officials.

A June vote would avoid endangering a $1.75-billion water development proposal set for November.

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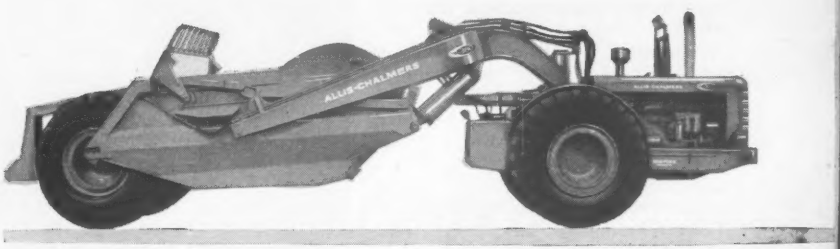
The new, all-hydraulic TS-360 is the only motor scraper in the 30-yd class with double-acting bowl jacks that provide 2-way power for faster loading, more cutting control.

The TS-360's exclusive hydraulic down pressure penetrates quickly into the toughest-loading materials. Penetrating force like this—along with Allis-Chalmers original low, wide bowl—gives you fast, heaped loads every pass.

Slope-cutting is another good example! "Cornering-in" with bowl down pressure lets your operator sink his bit *when* and *where he wants* . . . lets him maintain the best cutting depth while loading. The result: Clean, accurate slopes.

Positive penetration is only one reason you'll get top performance on any size job. *Two-stage steering—forced ejection and highest apron lift—90° steer and* KON-TORK *differential* are earth-moving advantages you cannot afford to overlook.

Put this new 340-hp TS-360 to work for you. Move more dirt per dollar invested than ever before. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



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Who Settles Work Disputes?

- **NLRB is not authorized to decide jurisdictional disputes on their merits, federal court rules.**
- **Decision points to voluntary settlements as the only decisive way to remove conflicts.**

The tangled web of jurisdictional disputes has been further snarled by a federal court decision, the moral of which is this:

A jurisdictional dispute is never settled unless and until the rival unions reach some kind of voluntary agreement.

In a Texas dispute over who should operate an air compressor, the U. S. Court of Appeals for the Fifth Circuit has ruled that the National Labor Relations Board cannot be compelled to decide the merits of a dispute. In doing so, it implicitly ruled that job decisions of the construction industry's National Joint Board for the Settlement of Jurisdictional Disputes amount to nothing unless they have the respect and support of the parties involved.

Significant result is that the still unanswered question of who is the final authority for the settlement of jurisdictional disputes has moved closer to the U. S. Supreme Court. The new decision conflicts with rulings of three other Circuit Courts—and such a conflict is a persuasive factor in getting Supreme Court review.

The Texas dispute, which affords a good illustration of how the present settlement machinery works, started with an argument over whether an operating engineer or a painter should start and stop a virtually automatic air compressor for paint sprayers. The work involved about a minute a day.

Sline Industrial Painters was doing construction and maintenance painting at the Texas City plant of Monsanto Chemical Corp. One of Sline's painters performed the task of starting and stopping the compressor—the painter who happened to be nearest did it.

Operating engineers working for Tampco Piping Inc., another contractor on the same job, tried unsuccessfully to get Sline to hire an engineer to tend the compressor.

Following their failure, the engineers struck Tampco. The Houston Chapter of Painting and Decorating Contractors of America, on behalf of Sline, claimed that the engineers had violated the Taft-Hartley Act by engaging in an unlawful jurisdictional strike and filed unfair labor practice charges against the engineers.

Meanwhile, Tampco referred the jurisdictional dispute to the National Joint Board.

Sline did not submit to the Joint Board's jurisdiction, but did send the board a description of the disputed work at the board's request.

The Joint Board proceeded with the case "on its own motion" because no party had objected to its action. It awarded the disputed work to the engineers. Sline felt under no compulsion to follow the board award and continued to use painters on the compressor.

Two months later, the NLRB got around to processing the first complaint. It held a Section 10(k) hearing on the dispute, agreeing with Sline that it was not a Joint Board case because Sline had not accepted the board procedure.

The NLRB found that the operating engineers had no legal claim to the work, under either a contract or certification, and issued a determination to that effect. This automatically made the strike illegal.

The engineers, however, refused to comply with the NLRB determination.

Nearly a year later, the NLRB's general counsel filed an unfair labor practice complaint against the engineers for continuing to engage in an illegal strike. The NLRB found the engineers guilty, ordered them to cease the strike, and asked the Circuit Court to enforce the order.

The engineers then claimed that the order was no good because the NLRB had failed to determine to whom the disputed work belonged. All the NLRB had done was to decide that Sline had not violated any legal rights of the engineers by assigning the work to the painters, even though the Joint Board had awarded it to the engineers.

The court approved the NLRB action and enforced the order.

Although the law gives the NLRB the power to "hear and determine" jurisdictional disputes, the court said, it does not direct the board to arbitrate disputes by making affirmative work awards.

The NLRB, it added, is supposed to outlaw and eliminate jurisdictional strikes, not to resolve the underlying disputes. In legal language, the board's power over disputes is procedural, not substantive, according to the court.

The court also agreed that Sline had not committed itself to the Joint Board procedure. Had it done so, the NLRB would not have entertained the dispute—but the net result would have been the same if Sline still refused to comply with the award to operating engineers—the Joint Board has no power to enforce its awards.

Pending further litigation or changes in the law, however, the decision does tend to encourage voluntary settlement of jurisdictional disputes as the only sure way of resolving them. And it points up the need for wider industry support of the National Joint Board, which is the center of the industry's machinery for voluntary settlement.

Unions, Contractors Try New Approach to Safety

Labor and management representatives from the construction industry have joined the Connecticut State Labor Department in starting a pilot program for on-the-job safety promotion. Sponsors hope it may become a model for other states to follow.

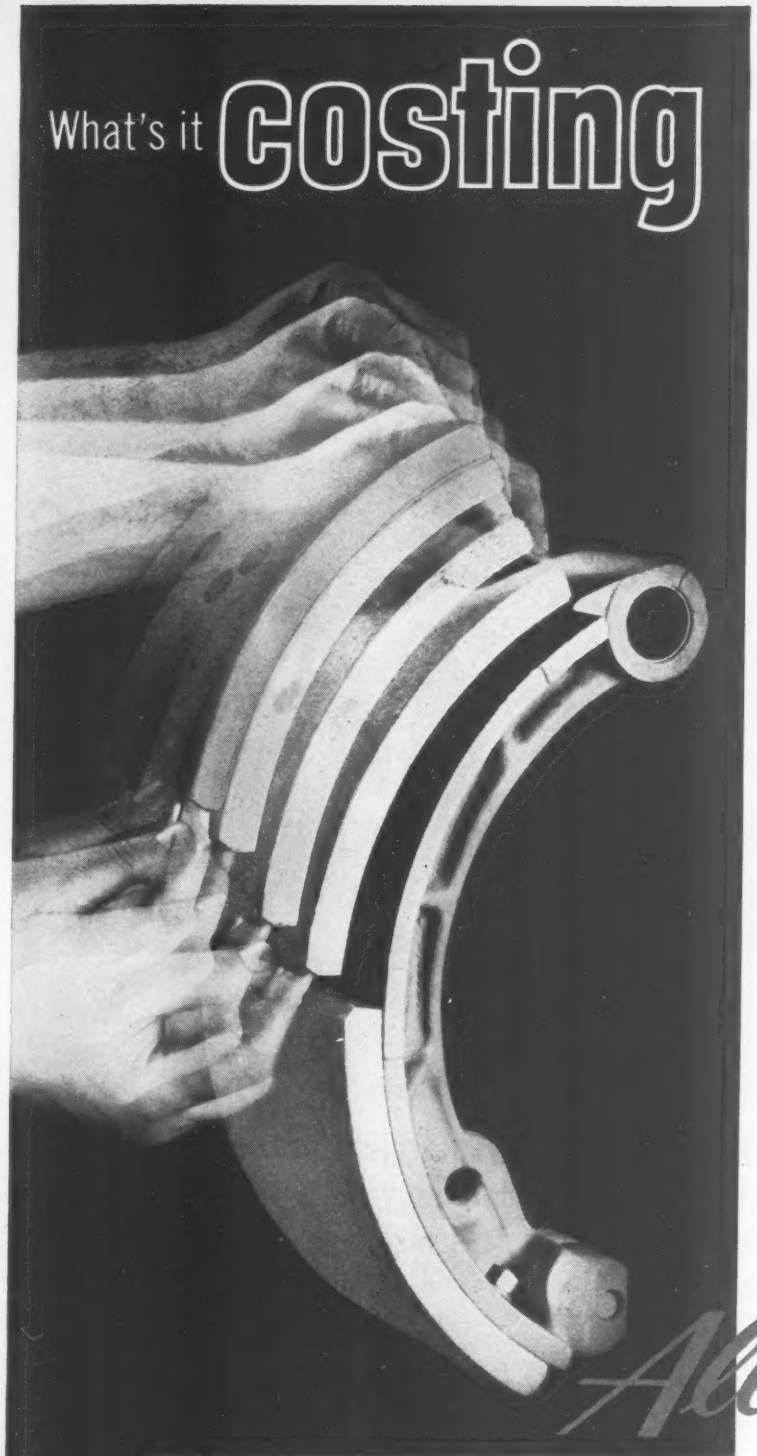
The program consists of weekly discussion sessions on safety problems in the industry. One of the objectives is the training of safety supervisors for work on construction sites.

Taking part in the program are the Associated General Contractors, the State Building and Construction Trades Council (AFL-CIO) and the Connecticut Road Builders Association.

To be discussed at the weekly meetings: legal responsibilities of employers and the responsibility of supervisors; relationship of labor and management in accident prevention; developing safe work habits; safe work places; housekeeping; safety organization; earthmoving equipment; heavy construction equipment; portable power tools; power-actuated tools; excavation, shoring and pile driving; scaffolds and work surfaces; coordination of contractors, subcontractors and related mechanical trades; and job site safety meetings.

(*Labor continued p.* 101)

What's it costing you to reline brakes?



Want to save the $1,000 *or more* brake jobs can cost you in a year? TORQMATIC DRIVE owners will tell you it's automatic with the built-in retarder, which also provides the added safety of another braking system.

For this optional TORQMATIC DRIVE feature saves service brakes for everything but full stops. Naturally linings last far longer . . . downgrade runs are safer.

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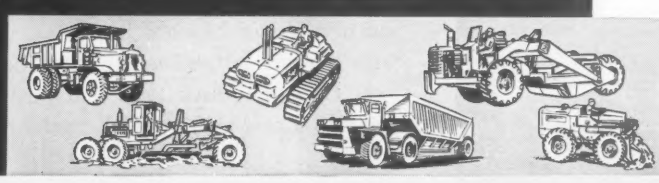

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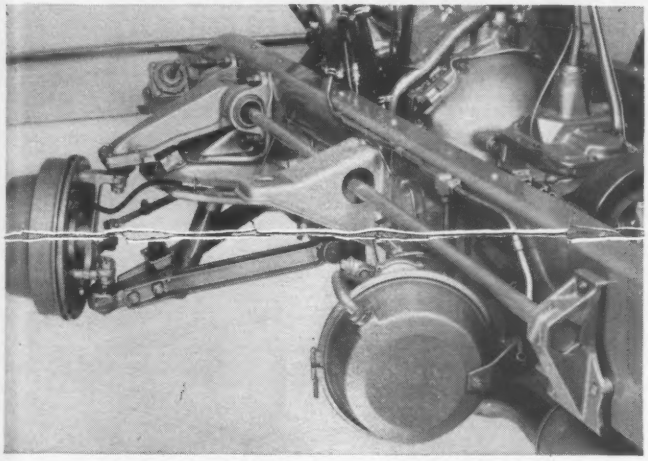
CHEVY'S BIG NEW BUILD IS LIKE

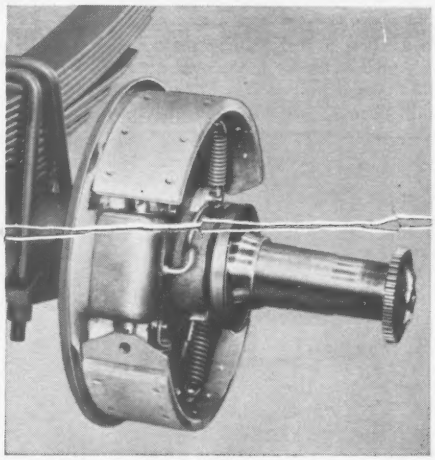
Here are some of the many ways in which Chevrolet's totally new build for '60 will work to build a bigger bank account for you. They show that a '60 Chevy means profit, through longer life, less maintenance, easier working, outsized cargoes and extra economy!

Major components of a 1960 Chevrolet truck last up to four times longer than ordinary truck parts – exhaustive testing has proved it. Likewise, the totally new cabs have proved 67% more resistant to twisting; and new frames for many models are as much as 4.8 times stronger in torsional rigidity. These are typical 1960 Chevrolet truck facts and figures – and they point up a new kind of tough truck build that helps you hang on to your dollars. And consider these '60 Chevy features from a profit-boosting standpoint:

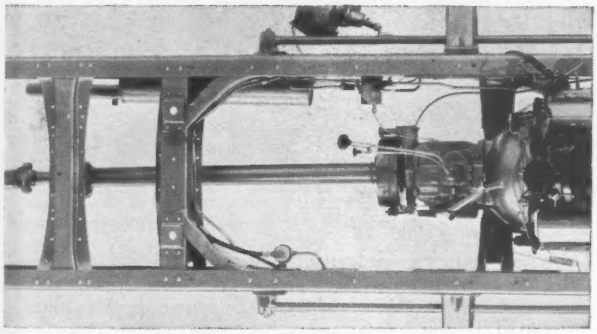
MONEY IN THE BANK FOR YOU!



New torsion-bar independent front suspension saves maintenance, increases work output. Independently suspended front wheels step right over bumps; tough torsion bar springs soak up shocks. As much as 58% of all objectionable road shock is absorbed before it reaches truck body, sheet metal or driver! And the smooth ride saves time on rough roads; means more work per day.



New Chevrolet brakes are bigger, better at bringing a loaded truck to a safe, sure stop. And the extra-wide lining wears longer – helps reduce upkeep expense. You get the best in braking in every model: choose from vacuum-hydraulic units, air-hydraulic and full-air brakes.



New Chevy frames with new do-the-job brawn. Box-section rail design is stronger than ever; rail section modulus has been increased as much as 57%. Massive "K" or "X" brace cross-members increase torsional rigidity and add to truck stamina; help keep you going years longer at least expense. Frames are of premium-quality, high tensile strength steel.

Precision-balanced wheels. This small balancing weight indicates that all Chevrolet truck front wheels are balanced in assembly – an advantage no other truck offers. It's assurance that Chevy handles easily and safely; that tires will last longer without shimmy and shakes from wheel imbalance.

Chevy's big new full-width hood and low-profile fenders make underhood components more accessible; servicing is faster and easier. New variable-rate rear springs come in high capacities to accommodate high payloads – and spring resistance adjusts automatically to cushion the load. You'll find, too, that 1960's savingest truck power is Chevrolet's: famous economy 6's and efficient short-stroke V8's for light-duty models . . . high-power, high-torque V8's and tough, dependable 6's for the bigger trucks. It'll profit you to see your Chevrolet dealer about Chevy's big new build, sometime soon. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

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Beam bridge carries Ohio Route #95 over Freeway.

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Two parallel beam bridges carry Freeway over Ohio Route #19.

A series of bridges on the new North-South Ohio Freeway, Route #1, now under construction, is being double-protected against corrosion and film embrittlement with Pittsburgh X-L-O Structural Steel Primer. When completed, this highway—costing more than 200 million dollars—will extend from Conneaut to Cincinnati. It will be an important link in U. S. Interstate Highway No. 71.

• **Bridges for the Freeway** in Morrow County were designed by Porter, Urquhart, McCreary and O'Brien, Consulting Engineers of Newark, N. J. The Delaware County bridge was designed by Alden E. Stilson & Associates, Limited, of Columbus, Ohio. Steel for these structures was fabricated by The C. E. Morris Company of Columbus, Ohio.

• **By painting girders and beams** with X-L-O, these shapes were protected against corrosion during shipment and erection. Costly metal cleaning was eliminated. Uniform coverage was assured even over surface irregularities. Rapid drying made possible prompt shipment, regardless of weather.

• **X-L-O also serves** as an excellent foundation which aids final coats to resist damaging weather-wear. It is available in combination of red lead and iron oxide, or 100% red lead.

• **Why not call on us** for advice or suggestions to protect structural steel on your jobs? Write, wire or phone Pittsburgh Plate Glass Company, Industrial Finishes, 1 Gateway Center, Pittsburgh, Pa.

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Discrimination: Heat Is on Contractors

- **Those who refuse to hire Negroes on federal jobs may face breach of contract suits.**
- **The Nixon committee is really after all-white union locals–but it has no jurisdiction.**

The construction industry is feeling the heat as the President's Committee on Government Contracts moves into a new phase of its six-year campaign to break down racial discrimination in employment on federal projects.

Real targets of the committee headed by Vice President Richard M. Nixon are lily-white labor union locals. But since these are effectively beyond the direct jurisdictional reach of the committee, it is putting extra-heavy pressure on contractors, who are still responsible for hiring (see also Editorials p. 116).

Because of the civil rights debate that is now dominating Congress, an Administration attempt to raise the committee to the status of an independent federal agency with statutory authority is having tough going. The Nixon committee has operated since August, 1953, by authority of a White House Executive Order. Now, President Eisenhower would like to have it put on a more durable foundation. But a majority of Congressmen in both parties appear either indifferent or downright hostile to the idea.

As it affects the construction industry, this is the situation that the Nixon committee is developing now:

• The committee, in concert with the General Services Administration and the Justice Department is, in effect, telling two prime contractors on federal building jobs in Washington, D. C., they must not exclude Negroes.

• The two prime contractors–Matthew McCloskey Construction Co. of Philadelphia and Norair Engineering Co. of Washington, and their electrical subcontractors on the projects–raise the point that Local 26 of the International Brotherhood of Electrical Workers, their craft labor source, cannot and has not referred Negro electricians because it has no colored members.

• Hovering in the background is AFL-CIO President George Meany, who has offered to recruit Negroes himself and who has agreed to use organized labor's influence in behalf of the contractors if Negro electricians are hired and if, as seems possible, Local 26 then precipitates a work stoppage.

• The Justice Department, without overtly making the threat, makes it clear that if Negro electricians do apply and are not employed, federal court action will be commenced against the contractors.

Since the situation is not fully developed, only a few of the potential consequences are apparent. As of this week, it stands like this:

• McCloskey's electrical subcontractor, H. P. Foley Co. of Washington, had indicated willingness to hire qualified Negro electricians for work on "Federal Office Building No. 6."

• Norair's subcontractor, Walter C. Doe Co. of Washington, agreed in principle with the idea but was still studying the problem. It withheld any commitment to change its policy of hiring exclusively through Local 26.

• Spokesmen for Local 26 made no moves toward desegregation. Some of them were saying that "George Meany speaks only for George Meany."

• No Negro electricians have applied. Washington's Urban League was searching throughout the Capital's extensive colored population for skilled Negro electricians who are unemployed and willing to take part in the test of this new extension of Nixon committee authority. Four Washington radio stations were also helping in the search by broadcasting job opportunity announcements.

The major question, of course, is the legal one. Informed Justice Department sources say that, if a court test actually comes, it would not even raise the threat of contract cancellation–an awkward penalty that would be virtually impossible on economic grounds alone. The department would seek remunerative penalties instead.

The grounds for any court test would, according to these sources, be a breach of contract. All federal contracts contain a clause under which the general and subcontractors agree not to discriminate because of race or color.

The Nixon committee has authority, never invoked, to recommend cancellation of a government contract or to recommend that a contractor be barred from further bidding on government work because of racial discrimination in employment.

The Nixon committee is making no direct threats, but it would welcome an addition of legal compulsion to its powers, although the exercising is done not by the committee, but by the government's contracting officers. In the construction cases at hand, General Services Administration is involved because it handled the McCloskey and Norair contracts.

The future of the Nixon committee is pretty much up in the air. Any future President could abolish the group merely by rescinding the Executive Order. That is one reason for the push to obtain statutory authority for the committee. Another reason is the feeling that the committee's recommendations, with congressional as well as White House backing, would carry more weight.

But a coalition of conservative Republicans and Democrats in Congress has no enthusiasm for any such step. They see it as a first move toward a federal Fair Employment Practices Act that would blanket all hiring practices, both private and public.

Also, the possibility is raised that the committee, if it eventually tries for and fails to win federal court backing in the construction industry cases, could suffer so much prestige damage that its future value would be impaired.

California Carpenters Seek Statewide Contract

The largest carpenters council in the nation has set the negotiation of a statewide labor contract in 1962 as one of its goals.

At its 32nd annual convention in Sacramento, the California State Council of Carpenters voted to negotiate a single contract on a statewide level when its present agreements expire in two years. Existing bargaining areas are San Diego, 11 southern California counties, 42 northern California counties and four Bay Area counties.

The council also approved efforts to obtain a shorter workweek without a reduction in take home pay.

Political action, however, was the general theme of the convention–"not from desire but from necessity," said council president C. R. Bartalini.

Among the legislative resolutions adopted was one calling for exemption of the construction industry from the hiring restrictions imposed by the Taft-Hartley Act.

Kaiser Group Makes Progress

First full meeting of the long-range Kaiser committee helps to dispel the bargaining gloom of U. S. Steel

The future of collective bargaining and of labor relations in general looks grim or promising, depending on where you look.

This week U. S. Steel Corp. warned the nation that "wage inflation," which has been magnified by the rapid growth of fringe benefits, remains a serious threat to our economy. "The problem of negotiating a labor agreement that will not increase production costs is still unsolved," it said. And it predicted that price inflation will never be checked unless something is "first or simultaneously" done about checking "general wage inflation."

Last week, however, management and labor interests in Kaiser Steel Corp. were less pessimistic. They were encouraged to believe that they might find the way to a stable, strike-free era in which labor and management can work together for the common good. If they succeed, they could answer the question posed by U.S. Steel, because the Kaiser group's ultimate goal is a formula for the equitable sharing of the fruits of the company's progress by stockholders, workers and the public.

In releasing its annual report, U. S. Steel said the nation "cannot prudently accept endless employment cost increases that outstrip increases in national productivity."

Its theory is that such wage increases force defensive cost-covering price increases" and perpetuate the "game of leapfrog up the ladder of wage inflation."

The game began when we "established the legislative and social framework which supports union power behind employment cost inflation," says U.S. Steel. Aside from the implication of that observation, however, the company offered no suggestions on how to call off the game until an informed public can make itself heard.

The Kaiser group, on the other hand, is well embarked on a positive program that seeks fair and constructive solutions to common problems. It is a committee of labor, management and public members established by Kaiser Steel and the AFL-CIO United Steelworkers during the settlement of their labor contract dispute last October (ENR Nov. 6, 1959, p. 105).

Elimination of contract deadlines and strikes and preservation of free collective bargaining are among its goals. Its ground rules require proper consideration for such things as labor cost savings, stability of employment, worker protection against increases in the cost of living, company expansion and worker progress.

Holding its first full meeting in New York last week, the committee sifted the preliminary data it has collected and began to concentrate on seven areas of labor-management disagreement. These ranged from the exchange of information between labor and management to protection of workers against technological displacement.

"We all feel that this represents a very significant new approach," committee chairman George Taylor said. He warned it is too early to predict what degree of success the committee will have, but he says the committee's efforts are bound to improve collective bargaining.

The committee has until next July 1 to demonstrate whether labor and management, through a better understanding of mutual problems, can jointly evolve policies and practices that are fair to all concerned, including the public.

Labor Leader Criticizes Extra Pay for Hazards

A union official has criticized labor for negotiating premium pay for dangerous work.

The criticism came from James A. Brownlow, president of the AFL-CIO Metal Trades Department, at the annual California Governor's Industrial Safety Conference.

Mr. Brownlow called premium pay a cheap way for management to buy the right to expose workers to hazards. Labor should work toward removal of hazards, possibly through legislation, he said.

If workmen's compensation were raised to the point where it would cost the employer less to reduce hazards than to pay benefits when accidents occur, the hazards would probably be removed, according to Mr. Brownlow.

He suggested that management be given a tax credit to cover costs of safety equipment installed over the required minimum and urged employers to convince their foremen that management does not want production gains at the expense of safety.

Laborers and Contractors Agree on New Hiring Plan

The contractor and union organizations whose illegal hiring practices produced the Mountain-Pacific case have reached agreement on a new hiring arrangement designed to avoid the pitfalls of the law.

The agreement, negotiated by the Mountain-Pacific and Seattle chapters of Associated General Contractors and the Western Washington District Council of Laborers, provides that local unions must refer applicants for jobs "on a non-discriminatory basis."

It states that "applicants shall in no way be affected by union membership, by-laws, rules, regulations, constitutional provisions, or any other aspect of union membership, policies or requirements."

A full description of the hiring procedure must be posted.

Employers may reject persons referred by the union, but must state their reasons.

A joint investigating board is set up to investigate discrimination complaints of job applicants. If a local union is found guilty of discrimination in referring applicants, its hiring hall privileges may be suspended for a year.

The language essentially follows the National Labor Relations Board mandate that hiring agreements be nondiscriminatory, preserve the employers' right of rejection and be posted.

The mandate grew out of charges by a Negro hodcarrier that the Laborers Council and three AGC chapters, including the Mountain-Pacific and Seattle ones, had denied him employment because he was not a union member.

The agreement also seeks to meet the appellate ruling of the Ninth Circuit Court that the acid test of non-violation of the closed shop ban under any hiring arrangement is the absence of discrimination in actual practice.

Teamsters Plan to Demand National Labor Agreement

The teamsters union is moving closer to its goal of nationwide labor contracts.

Teamster President James Hoffa disclosed last week that the union would demand a single, national agreement for local and long distance truck drivers.

At the same time union vice president Harold Gibbons said that through the use of uniform expiration dates for labor contracts a national agreement for warehousemen and freight company workers is possible by 1961.

The disclosures were made at a quarterly meeting of the union's Executive Board in Miami Beach.

a brand new 5 year old!

Here are just a few of the many features that put this new C-6 "Euc" years ahead of competitive crawlers:

Proven Torqmatic Drive . . . performance tested and proved in thousands of Euclid earth-movers on the toughest jobs.

Full Power Shift . . . no master clutch . . . easy operation and "fast as a fox" maneuverability that cuts work cycle time.

Fast, Positive Response . . . common steering and braking control, plus Torqmatic Drive for smooth operation on all tractor work.

Better Track Alignment . . . track roller frames are pivot mounted ahead of final drives . . . advanced design of front equalizer bar maintains positive alignment.

Low Maintenance Costs . . . easy accessibility of major components . . . no adjustment of steering clutches and brakes required . . . fewer lube points . . . dry type air cleaner . . . 7 track rollers . . . no tractor weight on final drives . . . recoil system eliminates mechanical springs.

No other Euclid product has ever had the thorough testing—both on proving grounds and on actual jobs—that the C-6 tractor has undergone during the last 5 years. All of the product refinements and improvements resulting from this exhaustive test program, plus Euclid's really new concept of crawler design, make C-6 performance a new standard for comparison in the 200 h.p. tractor class.

Have your Euclid dealer give you the facts and figures on the C-6 . . . compare performance as well as specs with any tractor in its class and you'll see what this new standard of tractor versatility can mean to you in better production and return on investment.

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OFFICIAL PROPOSALS

Bids: March 24, 1960

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., eastern standard time on the 24th day of March 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany 1, New York						
Albany (Rtes. 32 & 144)	R.C. 60-33	Albany-Bethlehem, S.H. 5499 and So. Pearl St. extension (City of Albany)	0.02	Clean. & Paint. Truss Bridge No. 1	$175 Plans $5	$3,200
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Niagara (Int. Trg. Rte. 190)	FINIE 60-1	Interstate Route 506, Niagara Expressway, Cont. 1 (Packard Road to Isherwood Dr.) Proj. I-190-1(27)	2.08	Grad. Drain. & Misc. Work	$31,000 Plans $5	563,000
DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Rockland (Rte. 303)	FARC 60-11	New Jersey State Line–Congers, Pt. 1, S.H. 1898 New Jersey State Line–Congers, Pt. 2, S.H. 8448 Project U-328(8)	1.19 (0.37 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' Wide = 1.14 Mi. Misc. Work = 0.05 Mi.; (Access = 0.22 Mi. Asph. Conc. Pavt. and 0.15 Mi. Cem. Conc. Pavt.)	$70,000 Plans $5	1,288,000
Westchester	TSP 60-1	Taconic State Parkway: Kitchawan Road Interchange, Northeast Ramp	0.30	6" Cem. Conc. Pavt. = 0.33 Mi. Misc. Work = 0.06 Mi.	$10,000 Plans $5	171,000
DISTRICT No. 9, J. C. Frederick, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Rte. 17C)	FARC 60-17	Lestershire, S.H. 125; Hooper–Johnson City, S.H. 5699 Proj. U-401(9); U-1143(2)	1.94 (1.96 Acc.)	Asph. Conc. Pavt. = 2.33 Mi. Grad. & Drain. = 1.57 Mi.	$160,000 Plans $5	2,958,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: March 31, 1960

Nashville Avenue Wharf and Approach Trestles

Board of Commissioners of the Port of New Orleans will open bids at No. 2 Canal Street on Thursday, March 31, 1960 at 2 o'clock p.m. for the Nashville Avenue Wharf and approach trestles, approximately 60,000 sq. yds. in area of concrete deck on steel bearing piles from Board's stock, grading, foundations for future shed, etc.

Plans, specifications and bid forms may be secured after March 14, 1960 at Room 214 upon deposit of $25.00 by check payable to Board, refundable up to the extent of three sets taken out by anyone submitting a bid directly to the Board. Other sets are available at $25.00 per set, not refundable.

Preliminary plans are available for inspection.

Prior to opening of bids, bidder shall submit evidence that he holds license of proper classification and in full force and effect under La. R.S. 37:2151.

Deposit of 5% of bid, by certified or cashier's check, is required with bid.

Acceptable surety bond for amount of bid is required with notarial contract.

Board may accept or reject any bids, waive informalities and award contract in its best interest.

Bids: March 24, 1960

Beach Protection

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Public Building Law and Highway Law, sealed proposals will be received, until 10:30 A.M., E.S.T., March 24, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for:

Contract B.P. 60-76
Beach Protection
(Artificial Beach Nourishment)
at Asharoken Beach, Town of Huntington
Suffolk County, New York

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor The Governor Alfred E. Smith State Office Bldg., Albany, New York.

(b) Mr. William Mende, Principal Bldg. Construction Engineer, Department of Public Works, 270 Broadway, New York City, New York.

(c) In addition to the above mentioned offices, plans, maps and specifications for Contract B.P. 60-76 may be examined and obtained at the office of Mr. Milton E. Goul, 325 West Main St., Babylon, L. I., New York.

The deposit for Plans and Proposal Forms for Contract B.P. 60-76 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's Estimate of Cost for Contract B.P. 60-76 is $113,000.00.

Proposals for Contract B.P. 60-76 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the State of New York, Commissioner of Taxation and Finance for the sum of $6,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Public Building Law and to the Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: March 25, 1960

Rip-Rap for Pier Protection Townsends Inlet Bridge Avalon, New Jersey

CAPE MAY COUNTY BRIDGE COMMISSION
NEW JERSEY
ADVERTISEMENT FOR PROPOSALS

March 10, 1960

Sealed bids for furnishing and placing rip-rap protection at Pier 1 of the Townsends Inlet Bridge near Avalon, New Jersey, will be received by the Cape May County Bridge Commission in its offices at Cape May Court House, New Jersey, until 2:00 P.M. Eastern Standard Time on March 25, 1960, and then at said place, publicly opened and read aloud.

The Information for Bidders, Proposal, Contract, Contract Bond, Plans and Specifications may be examined at the office of the Commission, First National Bank Building, Cape May Court House, New Jersey, and at the office of Howard, Needles, Tammen & Bergendoff, Consulting Engineers, 99 Church Street, New York 7, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Commission or to the Consulting Engineers. The payment will not be refunded and contract documents are not required to be returned.

The Contract will be awarded or the proposals rejected within thirty (30) days from the date of opening proposals. The Commission reserves the right to waive any informalities in and to reject any or all bids.

Cape May County Bridge Commission
Robert J. Campbell, Chairman

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5290) will be received at Fargo, North Dakota, until 10 a.m., Central Standard Time, April 26, 1960, for furnishing labor and materials for Constructing Foundations and Furnishing and Erecting Steel Towers for Jamestown-Fargo 230-Kilovolt Transmission Line No. 2, Transmission Division, North Dakota, Missouri River Basin Project. Location in Stutsman, Barnes and Cass counties, North Dakota. Principal items are 9,200 cu. yds. excavation; 3,350 cu. yds. concrete; 389 bodies—furnishing 50, 60, 70 and 80-foot tower bodies of various types; 389 towers—erecting 50, 60, 70, and 80-foot tower bodies of various types complete with required leg extensions; and other work. Completion time 490 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 1993, Fargo, North Dakota; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Office of Saline Water. Sealed Bids (Specification No. 195) will be received at Washington, D. C. until 3:00 p.m. Eastern Daylight Time, the 24th day of May 1960, for construction of a long-tube vertical multiple effect distillation sea water conversion plant to be erected near Freeport, Texas. Lump sum bid shall include: 1. One (1) 1,000,000 gallons per stream day sea water distillation plant with foundations, buildings, sea water intake and discharge, fencing and accessories all complete in accordance with invitation, erected on the site. 2. A firm bid to cover start-up operation costs during sixty (60) day test period. Completion in 270 calendar days from receipt of Notice to Proceed. For particulars, address Department of the Interior, Office of Saline Water, Washington 25, D. C.

Bids: March 30, 1960

Notice: NEW BID DATE

Transmission Mains

FAIRFAX COUNTY WATER AUTHORITY
ANNANDALE, VIRGINIA
PROJECT 14

APPROXIMATELY 26.5 MILES OF 12" to 30" CAST IRON, STEEL OR PRE-STRESSED CONCRETE PRESSURE PIPE WATER MAINS

Sealed proposals will be received by the Fairfax County Water Authority at the office of the Authority, 7310 Maple street, Annandale, Virginia, or by mail addressed to the Authority, P. O. Box 91, Annandale, Virginia, until 2:00 P. M., EASTERN STANDARD TIME, MARCH 30, 1960, at which time they will be read aloud, and contracts awarded as soon thereafter as practicable for the construction of water transmission mains at various locations in Fairfax County, Virginia.

The work comprises the furnishing of all materials and construction of the water mains and appurtenant work and is divided into four divisions, as follows:

Division A—Chain Bridge Road Water Main, comprising approximately 15,920 feet of 30" steel or concrete pipe water main.

Division B—Dunn Loring Road Water Main, comprising approximately 40,000 feet of 24" cast iron, steel or concrete pipe water main or 30" steel or concrete pipe water main.

Division C—Arlington Boulevard—Waples Mill Road Water Main, comprising approximately 1330 feet of 12" cast iron pipe water main and 34,800 feet of 18", 20" or 24" cast iron, steel or concrete pipe water main.

Division D—Floris Road Water Main, comprising approximately 23,650 feet of 14" or 16" cast iron pipe water main or 18" cast iron, steel or concrete pipe water main; 19,000 feet of 14" or 16" cast iron pipe water main and 4,650 feet of 12" cast iron pipe water main.

Bidders may submit proposals on any complete Division or any combination of complete Divisions. Bidders are required to submit proposals on all alternate sizes and all alternate materials.

The Instruction to Bidders, Proposal, Agreement, form of Bid Bond, Performance Bond, Plans and Specifications for the work may be examined at the office of the Fairfax County Water Authority, 7310 Maple Street, Annandale, Virginia, and at the office of Greeley and Hansen, Engineers, 14 East Jackson Boulevard, Chicago 4, Illinois. Copies of the Plans and Contract Documents may be obtained upon the deposit of $50.00 for each set, to be refunded upon return of such set in good condition within 10 days after the opening of bids.

Each proposal must be accompanied by a bid bond or a certified check on a solvent bank or trust company, made payable to the Fairfax County Water Authority, in the amount of $30,000.00 for *each* Division for which a proposal is submitted, as assurance that the bid is made in good faith.

Bidders must be registered as Contractors in the Commonwealth of Virginia, as provided by Chapter 7 of Title 54 of the Code of Virginia of 1950.

The Fairfax County Water Authority reserves the right to waive any informalities in or to reject any or all bids and to accept the bid which it deems most favorable to the interests of the Authority after all bids have been examined and canvassed.

FAIRFAX COUNTY WATER AUTHORITY
By: James J. Corballis, Jr.
Engineer-Director

February 24, 1960

Bids: April 13, 1960.

Main Sewage Treatment Plant Additions

NOTICE IS HEREBY GIVEN that sealed proposals for "Main Sewage Treatment Plant Additions, Stage 3—Sludge Digestion, Grit and Screenings Handling Facilities" will be received by the City of Rochester Purchasing Agent at his office, Room 36, City Hall, No. 20 South Fitzhugh Street, Rochester 14, New York, until 11:00 o'clock A.M. Eastern Standard Time on April 13, 1960, at which place and time they will be publicly opened and read aloud. The proposals shall be for furnishing all material, equipment and labor for the construction and erection of structures and appurtenances, in accordance with the Plans, Specifications and other Contract Documents, prepared by Nussbaumer, Clarke & Velzy, Consulting Engineers for the City of Rochester.

The work is subdivided into four separate Contracts, as follows:

Contract 3A—General Construction
Contract 3B—Piping, Equipment and Plumbing
Contract 3C—Electrical Construction
Contract 3D—Heating and Ventilating

Contractors may submit proposals for any of the contracts for which they qualify under New York State Law. Combination bids not allowed.

These Plans, Specifications and other Contract Documents may be examined at the office of Nussbaumer, Clarke & Velzy, 327 Franklin Street, Buffalo 2, New York, and 500 Fifth Avenue, New York 36, N. Y., and may be examined and copies thereof may be obtained at the office of the Purchasing Agent. One copy of the said documents may be obtained upon payment of $100.00 deposit; any bidder returning such copy in good condition within thirty (30) days following the opening of proposals will be refunded $100.00 and any non-bidder so returning such copy will be refunded $50.00.

The City of Rochester reserves the right to reject any or all proposals, and to waive any informalities, and to make an award to other than the low bidder, should the best interest of the City thereby be promoted.

Proposals shall be made on the form provided in the Contract Documents, and each proposal shall be accompanied by a certified check made payable to the City of Rochester, N. Y., in an amount not less than five percent (5%) of the total amount of the proposal, conditioned that the bidder will execute the Contract and deliver the required. Performance Bond for the proposed work within ten (10) calendar days after the date of written notice that his proposal has been accepted. For Proposals with total amounts in excess of $200,000, or proposals for work financed or aided by any Federal or State Agency, a bid bond in the amount of five (5) per cent of the amount of the proposal, in proper form, executed by a surety company acceptable to the City, will be accepted in lieu of the aforesaid certified check.

A bidder may not withdraw his proposal within forty-five (45) calendar days after the opening of proposals, but may withdraw his proposal at any time prior to the scheduled time for the opening of proposals.

Information concerning materials and equipment, when requested, must be furnished with bid. Failure to do so will result in bid being declared informal.

KENNETH E. PUNNETT
Purchasing Agent
City of Rochester, N. Y.

Dated: March 15, 1960.

Bids: April 14, 1960.

Construction of Sewage Pump Stations

Sealed bids for the construction of Sewage Pump Stations for the Gates-Chili-Ogden Sewer District will be received by the Monroe County Sewer Agency at its office at 407 Terminal Building, 65 Broad Street, Rochester 14, New York, until 11 o'clock, A.M., E.S.T., on the 14th day of April, 1960.

Bidding forms can be obtained and plans and specifications examined at the office of the Monroe County Sewer Agency, or the office of The Lozier Company, Engineers, 10 Gibbs Street, Rochester 4, New York.

Copies of plans and specifications may be obtained upon the payment of twenty dollars ($20.00) for each set. The full amount charged will be returned to all bidders who return the complete plans and specifications in an acceptable condition within thirty (30) days from the date of award to the successful contractor. Half of the amount charged will be returned to non-bidders who return the complete plans and specifications in an acceptable condition within thirty (30) days from the date of award to the successful contractor. Checks or money orders should be made payable to the order of Gordon A. Howe, Monroe County Director of Finance.

The work consists of the construction of: SECTION "H"—Sewage Pump Stations at four separate locations in the Town of Gates, as follows:

1. Howard Road
2. Dearcop Drive
3. Buffalo Road (Central Gates)
4. Trolley Boulevard (North Gates)

Bidders may bid on individual pump stations and on all four pump stations combined. The Monroe County Sewer Agency reserves the right to award each pump station separately.

COUNTY OF MONROE
BY: C. A. Bennett
Purchasing Agent

March 13, 14, 15, 1960

Bids: April 12, 1960.

Venturi Meters

CONTRACT 458

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, April 12, 1960, for Contract 458, for furnishing, testing and delivering stainless steel venturi meters, together with their instrument assemblies and appurtenances, complete in every respect and ready for installation, all as set forth in the specifications. One 143-inch by 102-inch venturi meter and one 24-inch by 18-inch venturi meter will be required for the Release Water Works at the Cannonsville dam, and one 108-inch by 72-inch venturi meter will be required for the Outlet Works of the West Delaware tunnel.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of fifteen thousand dollars ($15,000.00), for the proper execution of the Contract.

Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in the Secretary's office, Room 1312, at the above address, upon application in person or by mail, by depositing the sum of $5.00 for each pamphlet. Within 30 days following the award of contract or rejection of bids the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars apply at the office of the Chief Engineer, at the above address.

ARTHUR C. FORD, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; BETTY COHEN, Acting Secretary.

Bids: March 31, 1960

Brass Rail Restaurants Alterations

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CONTRACT O & M 555A

Sealed proposals for furnishing and installing ventilation equipment for the Brass Rail and Golden Door Kitchens, alterations to the Golden Door Kitchen ceiling, and furnishing and installing range hood steam quench systems for the Golden Door Kitchen and Brass Rail Coffee Shop at New York International Airport, Jamaica, New York, will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A.M. Thursday, March 31, 1960, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administrative Services, which will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of Proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, March 17, 1960

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

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The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

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$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

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Discount of 10% if full payment is made in advance for 4 consecutive insertions.

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SITE CONSTRUCTION

Federal Electric Corporation offers several exceptional short-term positions of approximately seven months duration (May-November). These resident engineers will be responsible for construction aspects of major repair, major modification and new construction at FEC's DEW Line sites in Canada and Alaska.

SALARY ON DEW LINE, $1350 per month, plus room & board.

Applicants must be U. S., Canadian or British citizens.

Qualifications: 10 years engineering experience (at least 5 in field supervision of heavy and/or building construction); engineering degree or equivalent experience; broad knowledge of his specific field of engineering; basic knowledge of associated branches.

Write Mr. S. R. Brand, stating education and experience and date available.

FEDERAL ELECTRIC CORPORATION

Service Division of International Telephone and Telegraph Corporation

Paramus Industrial Park, Paramus, New Jersey

ENGINEERS

HIGHWAY SANITARY

Permanent positions open for experienced engineers in highway or sanitary engineering design. Reply fully, stating present salary, income requirements, experience, age, education and registration. Local interview will be arranged.

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P. O. Box 736 Rock Island, Illinois

STRUCTURAL STEEL PLANT MANAGER

One of Top 10 fabricators of structural steel located in the East. Must have full experience in all phases of production and be able to take over full plant management. We are looking for man interested in permanent situation in highly respected organization. Salary open. Send full resume to:

P-3950, Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

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With heavy experience background in dams, tunnels and hydroelectric projects. Work domestic or foreign. Salary commensurate with experience. Write:

P-3097, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

HEATING and VENTILATING ENGINEER

Mechanical Engineer with several years experience in consulting engineering or architectural office, working with heating or air-conditioning design. Position open in product design and development section of manufacturer of air distribution systems for multi-story buildings. Work consists of creative design and experimental models, field engineering trips and some sales contact during introductory period. Liberal salary and fringe benefits with stable national firm. Please forward resume of experience, education and salary requirements.

Harry C. Bott, *Personnel Department*
GRANITE CITY STEEL COMPANY
Granite City, Illinois

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• POSITIONS VACANT

Sales Engineer—Civil, Highway product, major corporation, locate one of several points East Coast. Experience in highway construction or with Highway Department desirable. In applying state full qualifications and experience. P-3875, Engineering News-Record.

Prestressed Concrete Sales Engineer: To represent established expanding prestressed concrete plant in Denver, Colorado. Structural design background helpful. Desire top man as first assistant to managing director and capable of full charge. Salary open, profit sharing plan, vacation. Send complete resume. Strictly confidential. Craftsmen Construction Company, 1337 E. 18th Ave., Denver, Colorado.

Opening for Engineering graduate to act as Project Manager, Field Supervisor, Estimator and Man Friday for growing construction company, New York area and East. Write P. O. Box 387, Scarsdale, N. Y.

Estimator—Heavy Construction. Expanding mid-west industrial, institutional commercial firm with nine state operation. Opening for man (25-35) thoroughly experienced in competitive public bidding. Must have take-off, price and sub-contract ability. Send complete resume. All applications held in strict confidence. Our employees know of this ad. P-3938, Engineering News-Record.

General Manager—Civil Engineer. Immediate opening for qualified take-charge applicant in leading commercial and industrial general contractor's organization, located in Arizona. Will be responsible over estimating, bidding, purchasing, subcontracting and organizing projects. State experience, resume, references and salary range. P-3937, Engineering News-Record.

Office-Manager and Controller. Leading southwestern U. S. Building Construction Firm has immediate opening for qualified applicant experienced in controllership functions, C P A desirable. Background of General Contracting Accounting Methods very essential. Submit resume, detailing education, experience, references and salary range. P-3944, Engineering News-Record.

Construction Superintendent—Civil Engineering & heavy construction background. General contracting work in western New York. Please send complete resume & salary requirements. P-3964, Engineering News-Record.

(Continued on opposite page)

• POSITIONS VACANT

(Continued from opposite page)

Civil Engineer. Once again a leading upstate employer offers a challenging opportunity to assist in a program of engineering personnel selection. The man we seek holds a bachelor's degree in civil engineering and has at least two years of engineering experience or teaching engineering subjects in college, or an equivalent of the above. Beginning salary for this five-day, 37½-hour week is $6410 with guaranteed increases each year. In addition, there are many fringe benefits. We are anxious to fill this vacancy as soon as possible. Personal interviews in Albany, N. Y. and possibly other cities where arrangements can be made. Qualified applicants should send a brief resume to P. O. Box 1624, Albany, New York.

York, Pennsylvania—Planner—Excellent salary Opportunity—Position of responsibility with large Engineering-Architectural firm. Qualifications—Degree in planning or allied professions with 2 to 4 years experience. Immediate assignments. Personnel Director—Buchart Engineering, 55 South Richland Ave., York, Penna.

Wanted: Structural Designer with approximately 8 years drafting and design experience in reinforced concrete and structural steel frame buildings. For more details send complete resume to Sollitt Construction Company, Inc., 301 Columbia Street, South Bend (24), Indiana.

Highway Design Engineer, graduate with minimum of 2 years recent highway and structures design experience, for permanent opening in Chicago Office of established consulting firm. Send detailed resume with salary requirements to P-3942, Engineering News-Record.

Civil Engineer—Registered Professional Engineer with experience in municipal street and sewer design. Beginning annual salary approximately $7,744.00. Annual 5% increase each year for next three years to final salary after three (3) years of approximately $8,814.00, with normal fringe benefits. Submit resume and references to Director of Public Service, City of Middletown, Ohio, P. O. Box 530.

Construction Superintendent CE Georgia to handle various jobs in state. Must be experienced public works. Salary commensurate with experience and ability. Send resume P-3919, Engineering News-Record.

Wanted—Engineer experienced in filter plant construction to act as Resident Engineer on enlargement and improvement of existing plant. State qualifications, experience, when can report, salary requirements and references. P-3925, Engineering News-Record.

Construction Engineer — young, willing to travel within U.S., Supt. & Supervisory capacity after training. Send resume and salary requirements. P-3940, Engineering News-Record.

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TO EMPLOYEES

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• POSITIONS WANTED

Project Manager or General Superintendent, field supervision and general management. Thoroughly experienced industrial, commercial and institutional projects in U. S. and O. S. Now employed available 90 days. PW-3662, Engineering News-Record.

Project Mgr. or General Superintendent all phases general construction. Not afraid to travel, but would prefer to work out of New England. Sal. Min. $11,000.00 plus bonus & stock options. PW-3828, Engineering News-Record.

Chief Estimator, building and heavy construction. Experienced project manager, buyer, expeditor, capable of handling all phases from estimate to closing. PW-3810, Engineering News-Record.

Graduate Engineer-Attorney, 33, married, construction background, knowledge Govt. contracts, seeks position in construction management, will consider anywhere in U.S. PW-3801, Engineering News-Record.

Construction Superintendent. Experienced Hospitals, schools, banks, industrial, commercial buildings and high rise public housing. Quantity take-off, from bidding to final completion. PW-3868, Eng. News-Record.

Grade Supt. Highways. Flood Control, Air Base. Midwest-Eastern or Foreign location O.K. Age 45. P.O. Box 123, Campbell, California.

Elect. Const. Supt. or Ass't. Supt. Overseas. 13 yrs. exp. heavy industrial const. Min. Sal. $12,000 per yr. Contact J. M. McBride, 106 E. Cooke, Glenolden, Pa. LUdlow 6-7131.

Construction Man; Age 35—15 years experience. Supervisory, Heavy and Highway. Resume on request. PW-3867, Engineering News-Record.

Supt. of Blasting heavy construction work. References. PW-3882, Engineering News-Record.

Project Engineer-MCE, P.E., 12 years experience instructures, highways, and foundations, Resume on request. PW-3905, Engineering News-Record.

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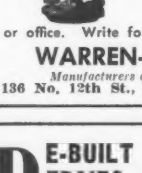

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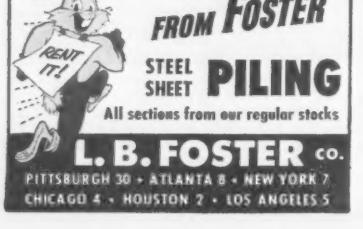
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No Room for Discrimination

NEGROES ARE NOT GETTING A FAIR DEAL in construction, and the construction industry is bound to suffer if the situation is allowed to continue. These facts are properly and persuasively emphasized in the recent report of the National Association for the Advancement of Colored People discussing the lack of apprenticeship opportunities for Negroes in the construction trades (ENR Mar. 3, p. 78). With the demand for skilled construction labor growing much faster than the supply, either in being or in training, discrimination becomes a stupid economic policy quite aside from the legal, moral and social issues involved.

Responsibility for this unsatisfactory state of affairs is shared by contractors, government and labor unions, although not in that order, as the NAACP would seem to imply. The great majority of contractors have no interest in the color of the skin of their workmen, asking only that they be skilled for the job at hand. The fact is that Negroes in this category are seldom available because most building trade unions bar them from membership by one means or another. The NAACP argues that contractors could at least hire whatever few skilled nonunion Negro workmen are available—and have a legal responsibility to do so on federal contracts that include anti-discrimination clauses. But this would be an almost certain invitation to labor trouble. Without more government backing than they have received in such situations, not many contractors can afford to be crusaders even when they might like to be.

The solution for the Negro's plight in the skilled construction trades must begin with the unions, where less than 1% of apprentices are Negro, and be fostered by government enforcement of existing non-discrimination clauses in contracts. Contractors then could—and most of them willingly would—employ skilled Negro workers just as readily as they do white workers.

Excuses aside, however, labor, government and contractor each has a job to do in assuring the construction industry of a skilled labor force equal to its needs. To start with, labor must lick its own discrimination practices and cooperate in admitting more Negroes to apprenticeship training. At present most construction trades unions are not even training apprentices fast enough to meet depletions through death and retirement. What will happen ten years from now when, according to the U.S. Department of Labor, the construction labor force must be 50% larger than it is now?

Government, too, must play a stronger role. The Nixon Committee on Government Contracts has thus far relied on moral persuasion in seeking compliance with the anti-discrimination clauses in federal contracts. If it needs a stronger legal prescription it should actively seek it.

Contractors, on their part, should more strongly assert their prerogatives in hiring, taking all possible support from a stiffening government attitude toward enforcing the law and from statements from top national union officials that they will crack down on discriminatory practices by the local unions.

Construction will need all the skilled labor it can muster to do its part in assuring national growth and prosperity. In any program that has a chance for success there will be no room for discrimination.

Setback for Model Code

ANYONE INTERESTED IN BETTER BUILDING CODES should be concerned that the New York State code is in a precarious position. Within two weeks, it may be legislated out of existence or weakened to the point of ineffectiveness.

When this building code was written nine years ago, it was hailed nationally as a model. The organization for administering, maintaining and promoting it was the object of worldwide study and admiration. More than 300 New York communities adopted the code voluntarily. Others were on the verge of adopting it. Then, suddenly, the situation changed.

The state legislature passed measures last year that abolished the Building Code Commission and put the code, which covers all kinds of buildings, under the jurisdiction of the State Housing Division. There the code staff did not fare as well as it had when part of a separate agency. Early this month, Arthur J. Benline, the technical director of the code and one of the country's foremost code authorities, left to become New York City's air-pollution-control commissioner.

The reasons for the state legislature's assignment of the code group to the Housing Division are obscure. They may be based on mistaken ideas of economy, or they may be purely political. At any rate, present state building-code legislation expires on April 1. Before then, however, the legislature probably will pass a bill backed by Governor Rockefeller that will retain what's left of the code staff in the Housing Division. This, of course, would be better than no action at all. But the work of the code staff under housing jurisdiction can never be as effective as that of an independent agency.

The code, which cost over $3 million to develop, is badly needed. There are still many areas throughout the state without any code at all and many communities still with archaic building regulations. The code staff had been making slow but steady progress in promoting adoption of the model code. As a result, differences between neighboring communities were gradually being eliminated. Adoption of new materials and techniques was getting easier. And the code was being kept up to date.

Now, it seems, the state's model code has become a political football. This should be stopped in New York and should not be allowed to be duplicated elsewhere. Uniform building requirements are a public benefit worth striving for, and once retained, fighting to hold.